Resource Guide to Understanding Mercury in Louisiana's Environment

2003 Annual Mercury Report

A publication of the

Louisiana Department of Environmental Quality

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Development of the *2003 Resource Guide to Understanding Mercury in Louisiana's Environment* required the assistance of numerous individuals within the Louisiana Department of Environmental Quality and they are acknowledged here for their efforts.

The Mercury Program sampling crew within the Surveillance Division consists of Robert Boothe, Jason Broussard and Brian Fontenot. William Tucker supervises the sampling crew. Regional Surveillance Division personnel involved with the wet deposition monitors include Otto "Jay" Zuelke, Virginia Graham, Julie Poe White, Mary Arnold and Johnny Mayeaux. Members of the Environmental Planning Division that work within the Mercury Program include Al Hindrichs, Mary Beth Fleming, and Kimberly Cornelison, with Susan Rohli conducting Geographic Information System support. Louis R. C. Johnson, Laboratory Services Division Administrator, maintains mercury analysis capabilities and has historically been instrumental in the program initiation. John Rogers works in the Recycling Section within the Office of Environmental Services. Bill Schramm, Environmental Technology Division, provided information on gas metering site remediation. Chris M. Piehler was the principal author. Contributions to the text of the report were received from Chris Roberie, John Rogers, Brian Fontenot, and Kim Cornelison. Appreciation is also expressed to DEQ's Communications Section for the work required to convert a basic manuscript into a document worthy of publication and for their continued efforts in reaching the public with the important message of mercury in the environment.

As a result of the cooperative efforts with the Department of Health and Hospitals (DHH) participants included Dianne Dugas, Robert Starsczak, and Shannon Soileau. Participants from the Department of Wildlife and Fisheries (DWF) included Gary Tilyou, Randy Pausina and Dr. Glenn Thomas.

It is our intention that the distribution of information by this agency will enhance environmental awareness with the citizens of Louisiana. With your support, we will continue working toward the overall mission of this agency and the protection of human health and the environment.

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EXECUTIVE SUMMARY

The Louisiana Department of Environmental Quality (DEQ) operates the Mercury Program in cooperation with two other State agencies, the Louisiana Department of Health and Hospitals (DHH) and the Louisiana Department of Wildlife and Fisheries (DWF). Personnel within the program seek out those streams and rivers where mercury may be a problem and provide information to the public so that they can make informed decisions to reduce their risk of exposure to mercury. In addition, research, outreach and multi-agency cooperation are being used to reduce the effects of man-made sources of mercury in the environment.

The goals of DEQ include prevention of environmental pollution, response to and cleanup of events that involve environmental pollution and the development of strategies to address specific issues of existing, known environmental contamination. Relative to mercury in the environment, DEQ works cooperatively with other State agencies to identify problem areas, understand the causes of the problems and work to protect the public by keeping them informed and knowledgeable about issues of significance.

The mission of DEQ is to provide service to the people of Louisiana through comprehensive environmental protection in order to promote and protect health, safety and welfare, while considering sound policies regarding employment and economic development. DEQ is an assertive proponent of a clean and healthy environment, accomplishing its mission through regulatory and non-regulatory means to achieve a balance that sacrifices neither economic growth nor environmental protection. DEQ encourages stakeholder and public participation in consideration of environmental issues. In addition, DEQ works to promote environmental awareness to the public through outreach and education. This report is an example of that part of DEQ's mission.

INTRODUCTION



One of the objectives of the Mercury Program and this report is to increase public awareness on the issues involving mercury. This report serves as a tool to inform the public of the State's efforts to assist in protecting citizens from exposure to mercury. This report will describe how information on mercury contamination is gathered, how and why mercury has become a pollutant of concern, who is involved on the State and Federal levels, and what the public can do to avoid effects of exposure to environmental sources of mercury. By raising awareness, the public can make decisions that will reduce their risk from mercury exposure. Family activities such as fishing and eating freshly caught fish are an important feature for the people of Louisiana, and they should be informed as to how to do so safely.

Louisiana has long been known as the "Sportsman's Paradise" due to the abundant natural resources present in the state. Fishing and hunting are very popular with Louisiana citizens and the quality of those experiences are directly related to the quality of the environment. While eating fish can be a healthy addition to a person's diet, it is possible to have *too much of a good thing.* A number of fish in some of our lakes and streams may contain a form of mercury in high enough levels to be of a health concern. DEQ maintains the Mercury Program that employs research and investigative scientists to collect data on mercury in fish, water, rainfall and sediment and works with other state and federal agencies to address mercury issues that are regional and/or global in nature.

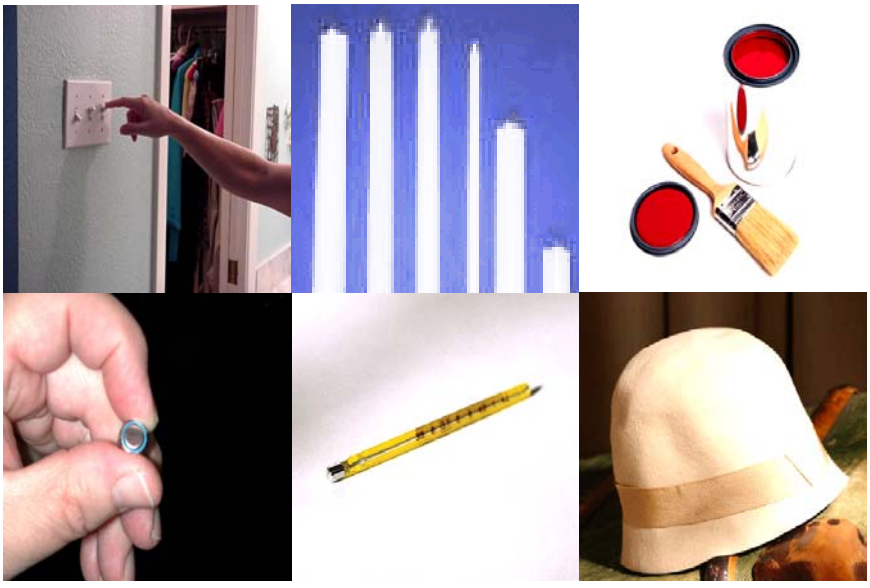
Mercury is a metal that exists naturally in the environment around the world. Mercury transport occurs from both natural and man-made sources. Although there are numerous sources of mercury in homes, industries and nature, some of the most significant risks of exposure occur when mercury in the bottom sediments of some rivers and lakes undergoes *methylation*, a process carried out by bacteria in certain conditions. Methyl mercury then gets into the food chain and results in mercury exposure to persons who eat fish.

Human exposure to mercury can affect the nervous system and the function of several internal organs, such as the brain and the kidneys. Young children, especially the unborn, developing fetus, are particularly susceptible to the effects of mercury. While efforts are on-going at the national level by the U. S. Environmental Protection Agency (EPA) to bring about regulation that will reduce releases of mercury from some sources, locally the Mercury Program collects and distributes information to aid the public in reducing the chances of harmful effects due to exposure to mercury. The messages provided by the program are recognized nationally as necessary to protect human health and warrant continued work and increased scope to ensure the goals and objectives are met.

UNDERSTANDING MERCURY

Mercury is a naturally occurring element that is found in several forms. Elemental mercury is a shiny, silver-white metal, but is unique in that, although very dense and heavy, it is the only metal that is a *liquid* at room temperature. It also evaporates relatively easily compared to other metals. In nature, mercury is found in Cinnabar. Cinnabar, a rock that is primarily red mercuric sulfide, is the main commercial mercury ore and has been mined for a variety of industrial and household uses for hundreds of years. Mercury combines with other elements, such as chlorine, sulfur or oxygen to form inorganic salts, such as mercuric chloride and mercuric sulfate. Mercury also combines with carbon to make organic mercury compounds, the most common being methyl mercury.

Mercury is an extremely useful compound as it conducts electricity, can be used to measure pressure and temperature, and easily forms alloys with other metals. It is a component of fluorescent lights, electrical switches, thermometers, batteries, dental fillings, pharmaceutical products, and latex paint. In industry, mercury is used in the manufacturing of chlorine/caustic soda, some anti-fouling paints, pesticides, and hospital equipment and supplies. At the turn of the century, mercury was heavily used in the manufacture of felt hats, hence the term "the mad hatter." Many of the workers in this industry died or suffered nerve damage from exposure to mercury in the workplace.



EFFECTS OF MERCURY

According to health experts, the human nervous system is very sensitive to all forms of mercury, but most exposures to mercury are from breathing metallic mercury vapors and consuming methyl mercury. Very young children are more sensitive to mercury than adults. Exposure to high levels of mercury can permanently damage the brain, kidneys and the nervous systems of unborn children. Effects on brain function can result in irritability, shyness, tremors, changes to vision and to hearing, and memory problems. Also, mercuric chloride and methyl mercury have been identified as possible cancer-causing chemicals.

Research scientists have determined that when mercury occurs in the sediment of streams and lakes, under certain conditions some bacteria can cause the mercury to become *methylated*, creating methyl mercury. Elemental mercury does not accumulate in the food chain, but methyl mercury is easily taken up in aquatic animals, like fish. Methyl mercury provides a good example of how *biomagnification* works. Even though mercury may be barely detectable in water, what little is present can accumulate at increasingly higher levels as small fish eat insects and big fish eat small fish. Some estimates show that fish may contain 100,000-to-1,000,000 times as much mercury as the water in which they live.

The first documented case of mercury poisoning due to industrial usage was in Minimata, Japan in the 1950s. A chemical plant discharged methyl mercury into the local surface waters, where it then bioaccumulated in the fish. The local residents were exposed to mercury by eating fish, a primary component of their diet. The victims suffered from severe neurological damage, which later became known as Minamata Disease. Symptoms of this disorder includes tingling sensations, muscle weakness, unsteady gait, tunnel vision, slurred speech, hearing loss, and abnormal behavior, such as sudden fits of laughter. An epidemic of mercury poisoning also occurred in Iraq in the 1960s and the 1970s. That event occurred as a result of the consumption of wheat grain that had been treated with a fungicide containing methyl mercury to prevent mold growth when stored.

Through these incidents, scientists have learned that dietary intake of mercury is the most prominent route of exposure, as dietary methyl mercury is almost completely absorbed by the body (EPA 1997). Although eating fish is a healthy part of a normal diet and has many positive health effects, eating too much fish from certain waters can result in an increased risk of exposure to harmful levels of mercury. That is why agencies like DEQ, DHH and DWF are working to place fish consumption advisories on streams and lakes where fish have been found to contain significantly high levels of mercury.

SOURCES OF MERCURY

Since mercury is a naturally occurring element (the earth's crust contains approximately one part mercury to two million parts other elements, or 0.5ppm), mercury has been and will always be in the environment. The same amount of mercury has existed on the planet since the Earth was formed. Approximately half of the mercury moving through the environment is a result of natural activities and the other half is related to human activities.

The inorganic forms of mercury are not very water-soluble; therefore, mercury was not initially seen as a serious water pollutant. Mercury containing products were thrown in the trash, to eventually end up in municipal landfills or burned in municipal waste incinerators. In landfills, thermometers and fluorescent light bulbs break, allowing mercury to leach into the soil and water. In the early 1990s, the use of mercury in paints, batteries, and some electronic devices was reduced. However, due to lack of suitable substitutes, mercury is still widely used in products such as fluorescent lamps. Manufacturers have begun developing lamps that require smaller quantities of mercury.

Before implementation of the Clean Water Act, industries could discharge large amounts of mercury into surface waters. Chlor-alkali plants convert salt water to chlorine gas and caustic soda. These plants are sources of mercury to rivers and lakes due to the mercury content of their wastewater.

Today, the use of mercury in the production process at chlor-alkali plants is being phased out. Most chlor-alkali plants in the United States using mercury are now closed or are using different processes. The few that remain are regulated with national limits on air emissions, waste disposal and water discharges.

Mishandling and improper disposal of common goods containing mercury often result in mercury being found in landfills and municipal wastewater. In old landfills, mercury may have historically leaked out of the product they were in and drained to soil and groundwater in *leachate*, which is the fluid seeping from the land-filled material. Groundwater often discharges to surface waters and may become another source of mercury to rivers and lakes. Years ago, landfills containing municipal (and sometimes hazardous) waste may have caught on fire and burned, releasing mercury from the landfill into the air. Today, landfills are highly regulated and require construction that helps ensure that material placed in them does not leak out or catch on fire.

Natural gas pipelines use meters to measure the amount of natural gas flowing to customers of the pipeline companies. Historically, electrical switches in some meters contained mercury. Spills from these meters contaminated the ground under them and became sources of mercury to the environment. Since 1991, several natural gas pipeline companies have come forward and, with oversight from DEQ, voluntarily cleaned the mercury from the environment around contaminated meter sites. To date, approximately 5,000 sites have been checked for mercury contamination and 2,500 that were contaminated have been cleaned.

Mercury is released into the atmosphere through the burning of fossil fuels (like gasoline and diesel fuel), but the EPA has determined that the most significant remaining sources of man-made mercury air emissions are coal-fired power plants. The EPA has conducted intensive studies of mercury emissions from power plants and is in the process of implementing new and stricter regulations. Years ago, open burning and commercial incinerators were common, most likely contributing to mercury in the air. Today, air quality regulations restrict open burning and the use of incinerators.

Once mercury is released into the air, it can be deposited onto surface soils and in water through rainfall. Mercury can also remain suspended in air for as long as one year (Schroeder, 1998). This amount of time in the air increases the likelihood that mercury released in one region will fall in rain to the ground, rivers or lakes in another region, sometimes very far away. Because of this, mercury pollution is truly a global problem. This phenomenon may explain why we don't often see mercury problem areas adjacent to sources of mercury or why some isolated, pristine lakes and streams have fish with high levels of mercury.

REDUCING MERCURY RISK

There are a number of things that you can do to reduce or eliminate the risks associated with mercury. Since most exposure comes from consuming fish taken from certain areas, **the most important thing you can do is to read and understand the fish consumption recommendations for all advisories related to mercury.** The advisories are developed to be protective of human health, but generally, avoid eating larger individuals of fish species and avoid eating predatory species like largemouth bass, bowfin, king mackerel and shark. Also, it is a good practice to eat a variety of fish species taken from a variety of waters, as this would minimize exposure to "hot spot" species and areas. This report contains all the current advisories due to mercury in Louisiana in Appendix C. The DEQ web site http://www.deq.state.la.us/surveillance/mercury/index.htm contains a lot of good information on mercury. You can also call DEQ at 225-219-3640 or e-mail surveillance@deq.state.la.us to ask specific questions on the issue. Currently, there are 29 advisories on freshwater fish consumption due to mercury in Louisiana.

DEQ posts advisory signs at public launches near lakes, rivers and streams where an advisory has been established. The signs are posted to inform the public that there are health issues relating to eating fish within nearby waters. The signs contain information about the advisory, such as what contaminants are causing the advisory, what types of fish are affected, how many fish certain people can safely eat and the extent of area included in the advisory. The signs also have telephone numbers so that the public can contact DEQ, DHH and/or DWF for additional information. It is important for the public to understand these advisories so they may act in a way that will reduce their exposure to mercury.

You can also help the environment by being aware of products that contain mercury. If you have a product that contains mercury, do your best to make sure that it is properly disposed of when it is time to throw it away. Recycling has played a large part in not only reducing the amount of mercury used by industries, but also reducing the amount released to the environment. Chlor-alkali plants, for example, now use control technology to capture mercury for recycling. In the last decade, the number of mercury recyclers has dramatically increased. In 1992, only five fluorescent lamp-recycling facilities existed in the U. S. Six more opened in 1993, and the number has continued to increase. Hundreds of facilities now accept batteries for recycling.

DEQ's Recycling Section maintains a current list of all recyclers in the state, sorted by commodity. In order to find the nearest recycler, go to DEQ's recycling website, http://www.deq.state.la.us/assistance/recycling/index.htm, and click on Recycling Directory - By commodity. Some items that may contain mercury are fluorescent light bulbs, thermometers, thermostats, switches, and children's light-up sneakers. These items should be carefully packaged and brought or mailed to the recycling facility. You should **NEVER** throw these items in the trash or flush mercury from broken thermometers down the toilet.

The DEQ website also contains information for safe handling of raw mercury in the home http://www.deq.state.la.us/assistance/recycling/home/merc.htm.

MERCURY PROGRAM STRUCTURE

The Mercury Program enlists the help of several divisions within DEQ. DEQ is led by the Secretary of the Department of Environmental Quality, a position appointed by the Governor of the State. The Secretary has three Assistant Secretaries for each of three offices, the Office of Environmental Compliance (OEC), the Office of Environmental Assessment (OEA) and the Office of Environmental Services (OES). The DEQ Undersecretary heads a fourth office, the Office of Management and Finance (OMF). The Surveillance Division (OEC), the Laboratory Services Division (OMF), the Environmental Planning Division (OEA), the Environmental Technology Division (OEA) and the Recycling Section of the Environmental Assistance Division (OES) all have a part in the Mercury Program.

Surveillance Division Role

The Surveillance Division has personnel in six regions across the state. Appendix A contains the regional office locations and telephone numbers. The DEQ Surveillance Division at the Acadiana Regional Office (ARO) in Lafayette, Louisiana, is responsible for collecting and preparing samples for the Mercury Program. The ARO has a staff of three people that conduct sampling of fish, water, sediment, and some plants for mercury content. The DEQ samples approximately 100 locations per year and has approximately 400 sites on file.

Initially, one of the goals of the Program was to sample public-fishing areas that had characteristics that were believed to contribute to methylation of mercury. After having visited those areas at least once, the procedure for choosing sites included all popular public-fishing areas. Currently, nearly all-popular public fishing waters have been sampled for mercury at least once. Water bodies that are problem areas for mercury (have advisories) are re-sampled annually. Areas that appear "borderline" for mercury problems are re-sampled within six months to determine if a problem exists. Even areas that do not show problems are re-sampled, but on a less frequent basis, approximately once every four years.

The Mercury Program sampling personnel go to selected water bodies throughout the state collecting samples for the Program. Although nets, hook and line, and traps are occasionally employed in collecting fish, fish are most commonly collected by using an "electro-fishing" workboat. The boat has a generator on board that introduces an electric current into the water. The electricity stuns the fish for a few seconds and allows the crew to net them. Once captured, the fish are put into a live well. The fish are then sorted into groups of similar species and comparable size. The remaining fish are returned to the water unharmed. In freshwater, the fish that are targeted include largemouth bass, bowfin (choupique), flathead catfish, freshwater drum (gaspergou), blue catfish, channel catfish, and crappie. Other appropriate species include spotted bass, striped bass, white bass, buffalo, red ear (chinquapin, shellcracker), bluegill, and warmouth (goggle-eye). In saltwater and coastal areas, target species include

spotted seatrout (speckled trout), red drum, southern flounder, red snapper, king mackerel, Spanish mackerel, tuna and others when available. Normally samples are made up of three to nine individuals of the same species and of similar size. These are called composite samples, and up to five composite samples are collected for each species. Each composite sample represents a different size group. For example, there would be a group of 1-pound bass, a group of 2-pound bass and a group of 1-pound freshwater drum, and so on. The size of the fish is important because larger, older fish tend to have more mercury in their tissue than smaller fish of the same species. A total of eight to 12 composite samples of fish from each site are kept for laboratory analysis. After the fish are sorted, they are bagged and put on ice. Records are kept of each individual's length, weight and gender. The fish from each composite sample are filleted, and the fillets are bagged and frozen. The fish samples are shipped to the University of Louisiana at Monroe (ULM) Soil – Plant Analysis Laboratory where they are analyzed for total mercury. Water, bottom sediments and Spanish moss are also collected at each site. The information gathered from these analyses is used in evaluating the possible sources and fate of mercury in the environment.

Surveillance Division field staff also collect rainwater samples from "wet deposition" monitors. The data gathered from these instruments and from the laboratory analysis of the water include volume of rainfall, total mercury concentration in the rainwater and estimated mass loading of mercury to the earth's surface from rain. The data from these samples support the understanding that mercury in rivers, lakes and streams is, at least in part, due to mercury in rainfall.

Laboratory Services Division Role

The DEQ Laboratory Services Division ensures that samples collected by the Mercury Program are properly handled and analyzed. The DEQ Laboratory Services Division has a contract with the University of Louisiana at Monroe (ULM) Soil – Plant Analysis Laboratory to conduct analysis of the fish tissue samples for mercury. The Wetlands Biogeochemistry Institute laboratory at Louisiana State University (LSU) in Baton Rouge is contracted to analyze bottom sediments for mercury. Sediments are analyzed for different forms of mercury and for the physical characteristics of the sediment as well. The DEQ laboratory in Baton Rouge is responsible for testing the water samples. The water is analyzed for alkalinity, mercury, sulfates, and total organic carbon.

Environmental Planning Division Role

When samples for the mercury project are collected in the field, field personnel send sample location information to an Environmental Program Analyst in the Standards, Assessment and Nonpoint Source

(SANS) Section of the Environmental Planning Division (EPD). These sheets are quite detailed and are stored for retrieval and used for assessing problem areas. When University of Louisiana at Monroe (ULM) Soil – Plant Analysis Laboratory provides data sheets with analytical results of fish samples, the data are entered into a database along with results from water, sediment and plant samples. Additional site-specific information of the waterbody is included with the fish tissue data, such as field measurements for pH, conductivity, dissolved oxygen, and temperature and analytical results for alkalinity, total mercury, sulfates, and total organic carbon.

Sample location data are stored at the EPD and includes latitude, longitude, DEQ region, parish, and a map detailing the area in which the sample was collected. Information is also included on weather conditions, habitat observations, water body characterization, and observances regarding the species collected, which are kept in hard copy only.

DEQ currently maintains a website devoted to the Mercury Program. The public may access the raw data, annual reports, fish consumption advisories, and advisory area maps on the website http://www.deq.state.la.us/surveillance/mercury/index.htm. An automated program, written by the DEQ's Information Services Division staff, pulls the raw data from an internal database and places it on the website weekly. Interested persons may access site locations, fish tissue data, and summary tables. The fish consumption advisories are updated within 30 days of the issuance of a new advisory or revision of a current advisory by the SANS staff. Maps of the advisory areas may be accessed through the links to the 1999 and 2000 Annual Mercury Reports and are also found in the back of this report.

Environmental Assistance Division Role

The Recycling Section of the Environmental Assistance Division conducts activities that are vital to the mercury problem in Louisiana. Because many products common in households contain mercury, the importance of proper handling of these products cannot be overstated. Public awareness of the hazards inherent to mercury-containing products is the first step. The Recycling Section maintains information on the DEQ public website http://www.deq.state.la.us/assistance/recycling/index.htm that is helpful for the public in identifying the products of concern and proper disposal techniques.

The Recycling Section has recently obtained federal funding for the Statewide Mercury Sweep. This will be an intervention, education and outreach program designed to help reduce mercury releases, exposures, and uses, while assuring safe storage and safe recycling or disposal. These activities bring the issue of mercury, a global problem, to the public to "think globally and act locally" since the general public plays a part in the movement of mercury through the environment.

Environmental Technology Division Role

Staff within the Environmental Technology Division work with natural gas pipeline companies to ensure that natural gas pipeline metering sites are checked for mercury contamination due to historical spills at those sites. When contamination is found, the pipeline companies have been voluntarily cleaning up the sites by removing contaminated soil beneath the meters that contained mercury. Since 1991, approximately 5,000 sites have been checked for mercury contamination and about 2,500 have been successfully cleaned to DEQ clean up standards. Although many sites remain, this part of the DEQ Mercury Program has a direct positive effect on mercury removal from the environment.

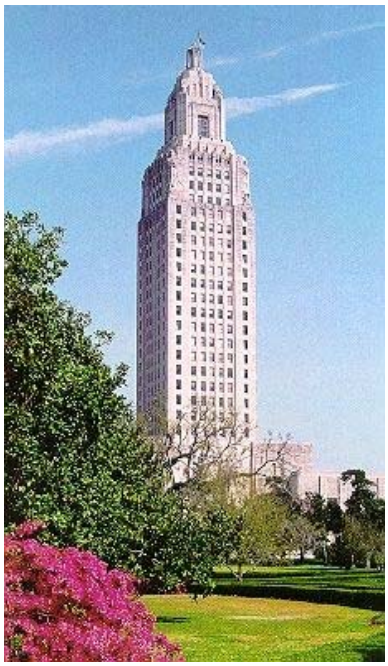
Other Agency Roles

State agencies other than DEQ are also involved in the Mercury Program. For example, DEQ personnel must obtain scientific collection permits from DWF in order to collect fish using methods that would otherwise be illegal, such as "electro-fishing" or using rotenone, a chemical substance that kills fish. The privilege is not taken lightly and DWF agrees to allow DEQ to conduct those fish collection activities, but only with careful scrutiny of the collectors and the collection effort before, during, and after fish collection events.

DWF also assists in the fish collection efforts by collecting certain saltwater fishes. Marine fishes (those that live in the Gulf of Mexico) are not easily collected by the DEQ fish collectors because most techniques used in small inland water bodies are not suitable for use in salty, "big-water" areas. Gathering information on marine fish is just as important as gathering information on fresh water fish because of the recreational fishing activity that occurs in both areas. Some of the marine fish species targeted by the Mercury Program include king mackerel, red snapper, cobia (ling, lemonfish), tuna, grouper and dolphin (mahi-mahi).

The information that comes from laboratory analysis of the fish samples is given to DHH so that the members of the Office of Public Health can determine if mercury levels in the fish are high enough to be of concern. If the mercury levels in the fish samples at a particular lake, river or stream are above an *action level* of 0.5 parts per million, DHH may request that DEQ take additional samples to be sure that an issue of concern exists. When DHH feels that enough fish samples have been taken to demonstrate that mercury levels are above the action level, DHH will draft advisory language and submit it to DEQ and DWF for agreement. Personnel from all three agencies review the draft advisory to make sure that the information is correct and complete. When the agencies agree that the advisory correctly describes the water body subject of the advisory, the limit of how many fish can be eaten and the species of concern, the heads of all three agencies sign the final advisory and issue it in a joint press release. The current advisories for mercury in Louisiana are found in Appendix C of this document.

Louisiana Legislature



Fish collection, laboratory analysis, posting signs and informing the public can be expensive. The legislature for the state of Louisiana recognized the need for conducting these activities and has provided "ear-marked" funds for the Mercury Program since 1993. The initiation of the Program came about at the request of the public through non-governmental organizations, who continue to play an active role in following the progress of the Program. Funds for the numerous tasks associated with the Mercury Program are handled by DEQ. These funds are often distributed by DEQ to other state agencies for their work, to universities for research and for laboratory services. The Mercury Program budget is approximately $500,000 annually.

MERCURY PROGRAM FUTURE PLANS

Mercury is found in our environment just about everywhere, regardless of whether it comes from natural or man-made sources. Traditional clean up methods have been used effectively, but, in nearly all cases, the source of mercury is not located in the same area where mercury problems are found. Our best strategies currently involve informing the public of the problems with mercury and giving you the knowledge you need to make personal decisions on how to reduce the health risks. This is why a very important part of the Mercury Program is to continuously find out where fish can be caught and eaten and post advisories in areas where they should not be eaten. A list of those advisories is included in Appendix C of this report.

Future plans of the Program include finding better ways to disseminate this information, making it available to all people, but especially those members of the community that are sensitive to mercury, namely children and women of child-bearing age. You may even find this report on the reading table of your doctor's office waiting room.

By enhancing certain aspects of the mercury sampling efforts, such as sediment sampling in advisory areas, the DEQ believes that some environmental sources of mercury may be discovered locally and remediated. For example, if a landfill or unauthorized disposal area is leaking mercury contamination, we may be able to locate those sites through a planned and aggressive sediment sampling strategy.

The DEQ Recycling Program continues to be a great way to inform people of environmental issues and helps keep waste (like mercury) out of the environment. A recent grant to DEQ will help fund the proper disposal of mercury and further enhance DEQ's ability to keep our environment clean.

The DEQ Environmental Technology Division continues to work with natural gas pipeline companies to clean up mercury spills that may have occurred around natural gas metering sites. To date approximately 20% of all meter sites in Louisiana have been checked for mercury contamination and cleaned up when required by DEQ clean up standards. Continued cooperation of natural gas pipeline companies will further the goal of locating mercury contamination in the environment and removing mercury-contaminated soil.

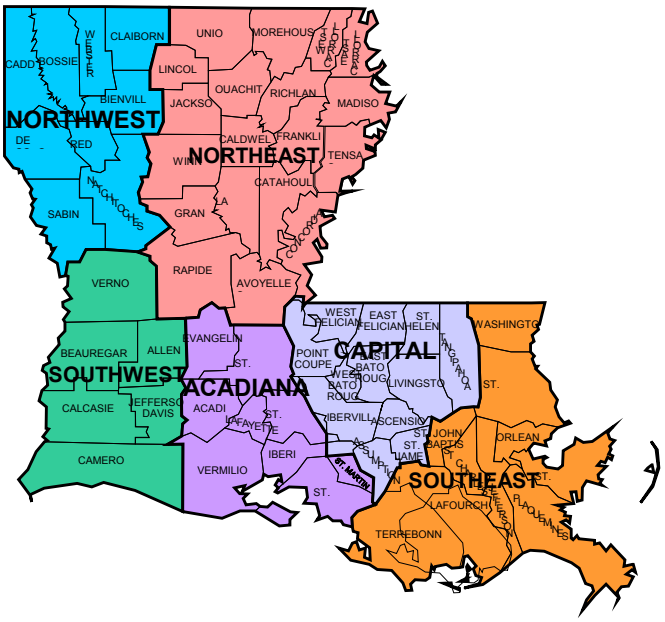
Although a lot is known about how mercury becomes a problem in rivers and lakes, there is still a great deal left to understand. Since we know that mercury becomes methyl mercury by the action of certain bacteria under certain conditions, it may be possible to alter the conditions of a lake or river to reduce the opportunity for mercury methylation to take place. Ongoing research into the specifics of this natural process may someday give us tools to reduce the effects that mercury has on our state waterways.

On a national level, DEQ and other state agencies are working with federal agencies to identify needs and implement long-term strategies for reducing risks associated with mercury. EPA has published a research strategy on mercury and gets participation from many states, including Louisiana, toward those stated goals. That strategy is found on the web site http://www.epa.gov/ORD/NRMRL/mercury/. The states that border the Gulf of Mexico are working together with the Gulf of Mexico Program to develop consistent advisories for marine fishes and come up with new innovative ways to get that information to the public. This group is attempting to expand its efforts into the Atlantic and Pacific coast states. EPA is also planning to finalize a rule that would require coal-fired power plants to reduce mercury in their air emissions. DEQ continues to regulate the amount of mercury in many air-emissions and water discharges through the permitting process.

Eliminating the uses of mercury is an issue that seems very logical to pursue, but is not as easy as it sounds. As long as consumers have a demand for products that contain mercury, and suitable substitutes are not developed, mercury will continue to be mined, refined and used in various industrial and household products. Some states have enacted programs to affect the amount of mercury sold in household products in their state. For example, the state of Minnesota has developed a Mercury Contamination Reduction Initiative that brings industry, consumers and the state government together to implement a strategy on mercury and its uses. Louisiana may pursue an initiative such as that, but it will require effort and possibly significant financial commitment on the part of the involved parties.

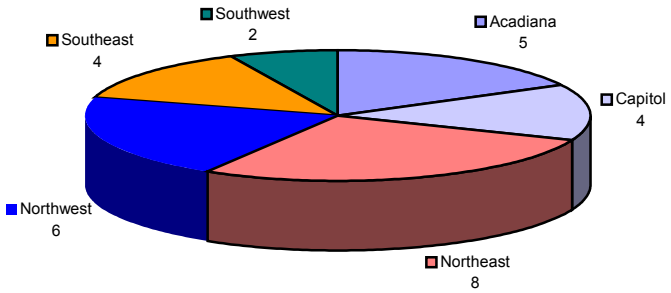
APPENDIX A

DEQ Regional Office Boundaries



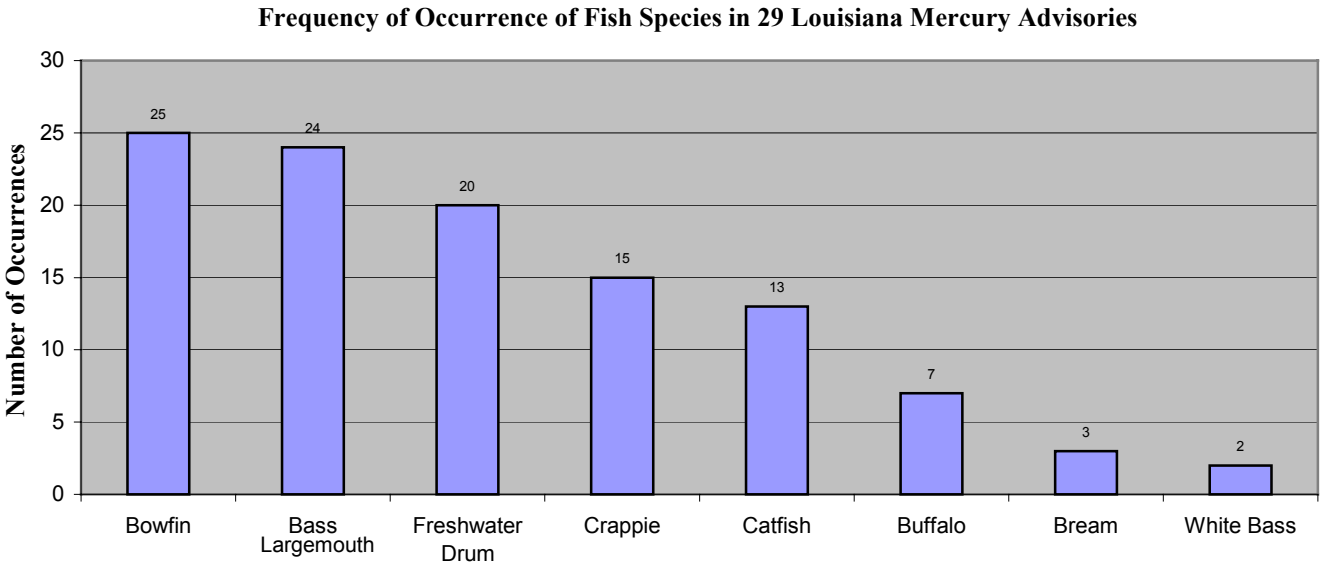
REGION	OFFICE LOCATION	TELEPHONE
Acadiana	Lafayette	337-262-5584
Capital	Baton Rouge	225-219-3600
Northeast	Monroe	318-362-5439
Northwest	Shreveport	318-676-7476
Southeast	New Orleans	504-736-7701
Southwest	Lake Charles	337-491-2667

Advisory Areas by Region

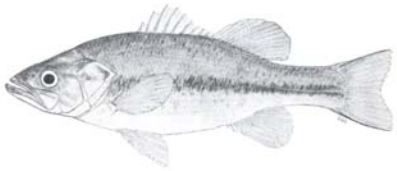


Advisory areas by region – this chart shows the number of mercury advisories in each DEQ Region.

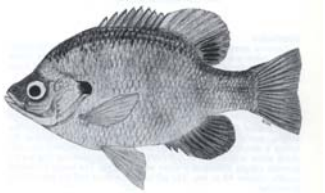
APPENDIX B



Frequency of Occurrence – this chart shows the fish species that occur most frequently in the mercury advisories in Louisiana. Of the 29 freshwater advisories, Bowfin and Largemouth Bass are mentioned in 25 and 24 advisories, respectively.

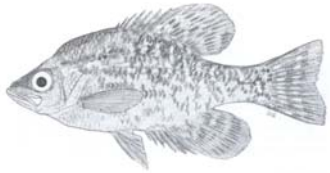


Largemouth Bass (*Micropterus salmoides*)

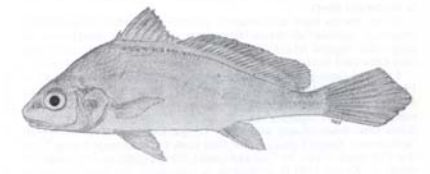


Bluegill bream (*Lepomis macrochirus*)

Bowfin (*Amia calva*)

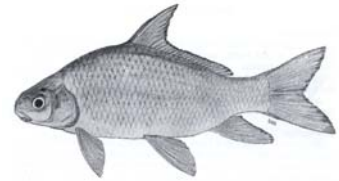


Black crappie *(Pomoxis nigromaculatus*)

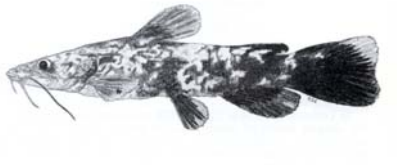


Freshwater Drum (*Aplodinotus grunniens*)

White Bass (*Morone chrysops)*



Smallmouth buffalo *(Ictiobus bubalus)*



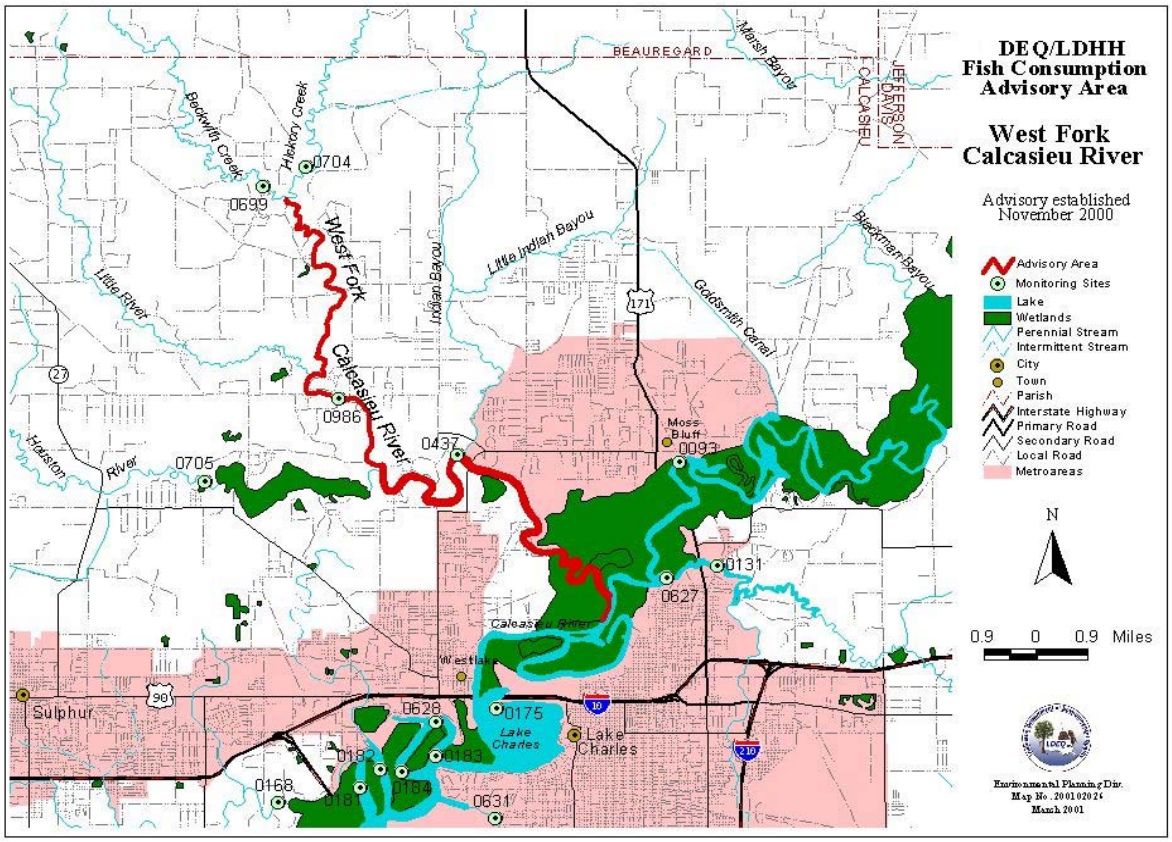
Flathead Catfish (*Pylodictis olivaris)*

APPENDIX C

Current Mercury Advisories in Louisiana

This section discusses the specific advisories and advisory areas for mercury within Louisiana. Louisiana advisories use a "limited-meal" approach. Unless the fish species is specifically addressed in the details of the advisory, please limit consumption of all species in an advisory area to 4 meals of fish per month. Louisiana fish consumption advisories are based on the estimate that the average Louisiana resident eats no more than 4 meals of fish per month (1 meal = ½ pound). **If you or your family members eat more than 4 meals of fish per month** from local water bodies, you might increase your health risks. You can contact the DHH/Office of Public Health toll free at 1-888-293-7020 for more information about eating fish that contain contaminants.

West Fork of the Calcasieu River in Calcasieu Parish



West Fork Calcasieu River - the red line shows the extent of this advisory area relative to fish consumption

This current advisory supersedes a previous advisory issued for this water body on November 20, 2000. This advisory includes that area of the West Fork of the Calcasieu River from the junction of Hickory Creek and Beckwith Creek to the confluence with the Calcasieu River in Calcasieu Parish northwest of the City of Lake Charles.

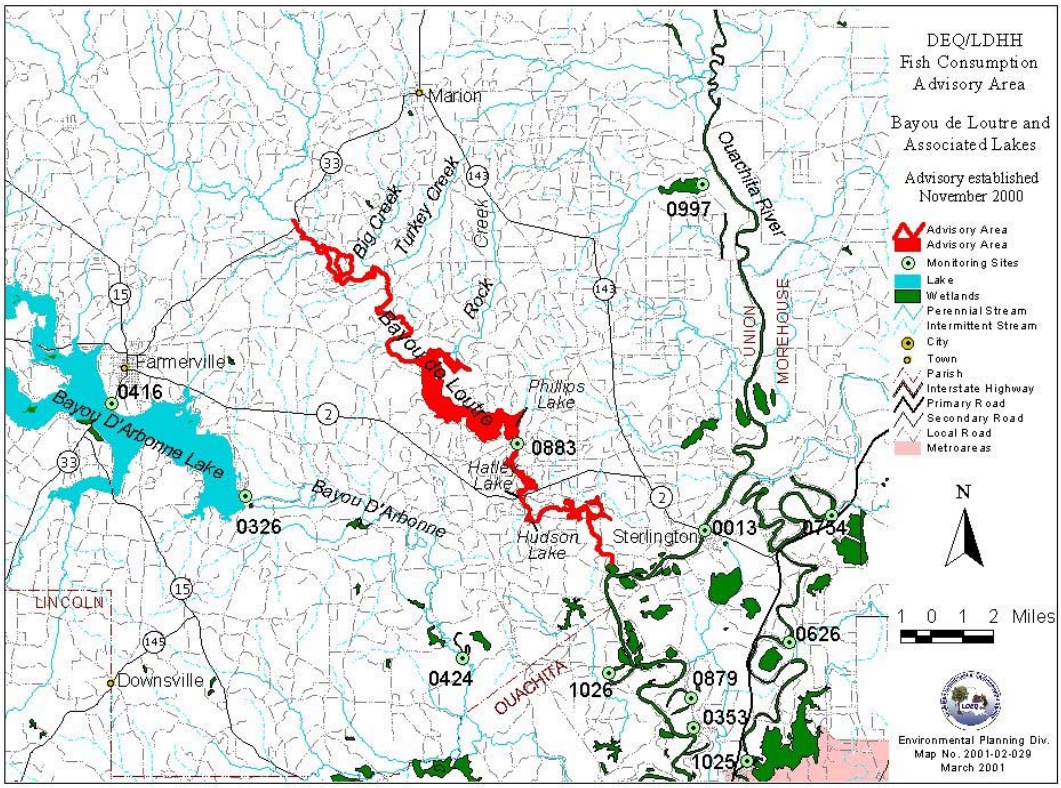
Sampling in the advisory area indicated that largemouth bass, freshwater drum (gaspergou), and bowfin (choupique, grinnel) contained sufficiently high levels of mercury to warrant an advisory. DHH,

DEQ, and DWF have jointly advised that the following precautions should be taken when eating fish taken from the West Fork of the Calcasieu River:

- **Women of childbearing age and children less than seven years of age SHOULD NOT CONSUME LARGEMOUTH BASS, FRESHWATER DRUM, OR BOWFIN from this advisory area.**

- **Other adults and children seven years of age and older should consume no more than TWO MEALS PER MONTH of largemouth bass, freshwater drum, or bowfin combined from this advisory area (a meal is considered to be half a pound of fish for adults and children).**

Bayou de Loutre and associated lakes in Union Parish



Bayou deLoutre and associated lakes - the red line shows the extent of this advisory area relative to fish consumption

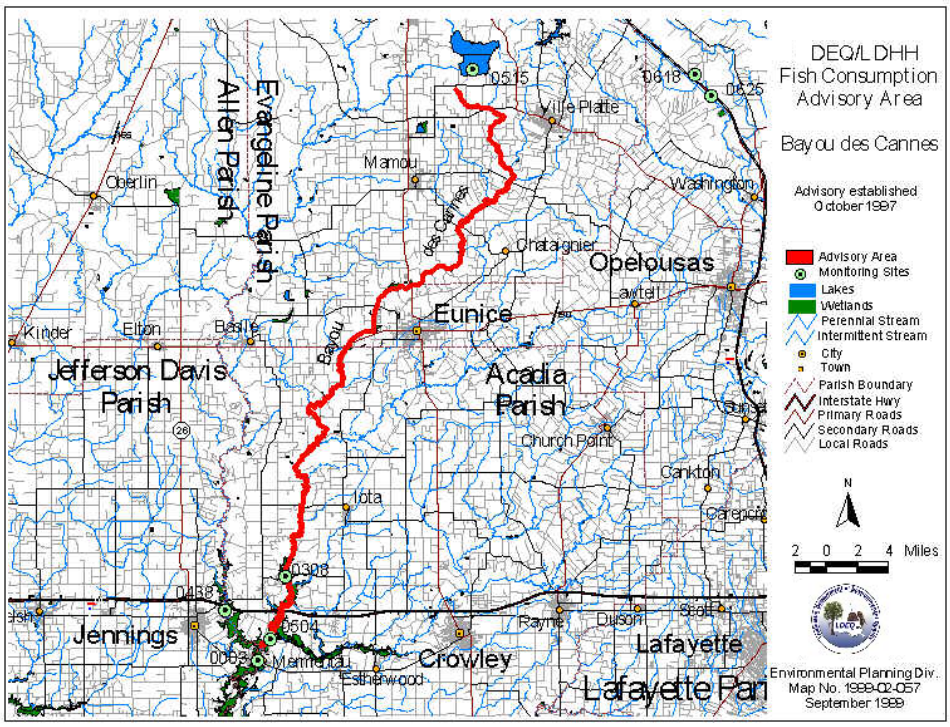
This current advisory supersedes a previous advisory issued for this water body by the state on November 20, 2000**.** This advisory includes Bayou De Loutre from Louisiana State Highway 33 to its confluence with the Ouachita River and includes Phillips Lake, Hatley Lake, and Hudson Lake in Union Parish.

Sampling in this advisory area has indicated that largemouth bass, bluegill sunfish (bream), flathead catfish (Opelousas catfish), freshwater drum (gaspergou), and bowfin (choupique, grinnel) contained sufficiently high levels of mercury to warrant an advisory. DHH, DEQ, and DWF advise that the following precautions be taken when eating fish taken from Bayou De Loutre:

- **Women of childbearing age and children less than seven years of age SHOULD NOT CONSUME ANY SPECIES from this advisory area.**

- **Other adults and children seven years of age and older should consume no more than TWO MEALS PER MONTH of all species combined from this advisory area (a meal is considered to be half a pound of fish for adults and children).**

Bayou des Cannes in Evangeline and Acadia Parishes



Bayou des Cannes - the red line shows the extent of this advisory area relative to fish consumption

This current advisory supersedes a previous advisory issued for this water body by the state in October of 1997. The advisory area includes Bayou des Cannes from its origin near Ville Platte in Evangeline Parish to the junction with the Mermentau River in Acadia Parish.

Sampling in this advisory area indicated that bowfin (choupique, grinnel), black crappie (sac-a-lait), and freshwater drum (gaspergou) contained sufficiently high levels of mercury to warrant an advisory. DHH, DEQ, and DWF advise that the following precautions be taken when eating fish taken from Bayou des Cannes:

- **Women of childbearing age and children less than seven years of age should consume no more than ONE MEAL PER MONTH of bowfin, black crappie, or freshwater drum combined from this advisory area (a meal is considered to be half a pound of fish for adults and children).**

- **Other adults and children seven years of age and older should consume no more than FOUR MEALS PER MONTH of bowfin, black crappie, or freshwater drum combined from this advisory area (a meal is considered to be half a pound of fish for adults and children).**

Bayou Desiard in Ouachita Parish
No Map Available

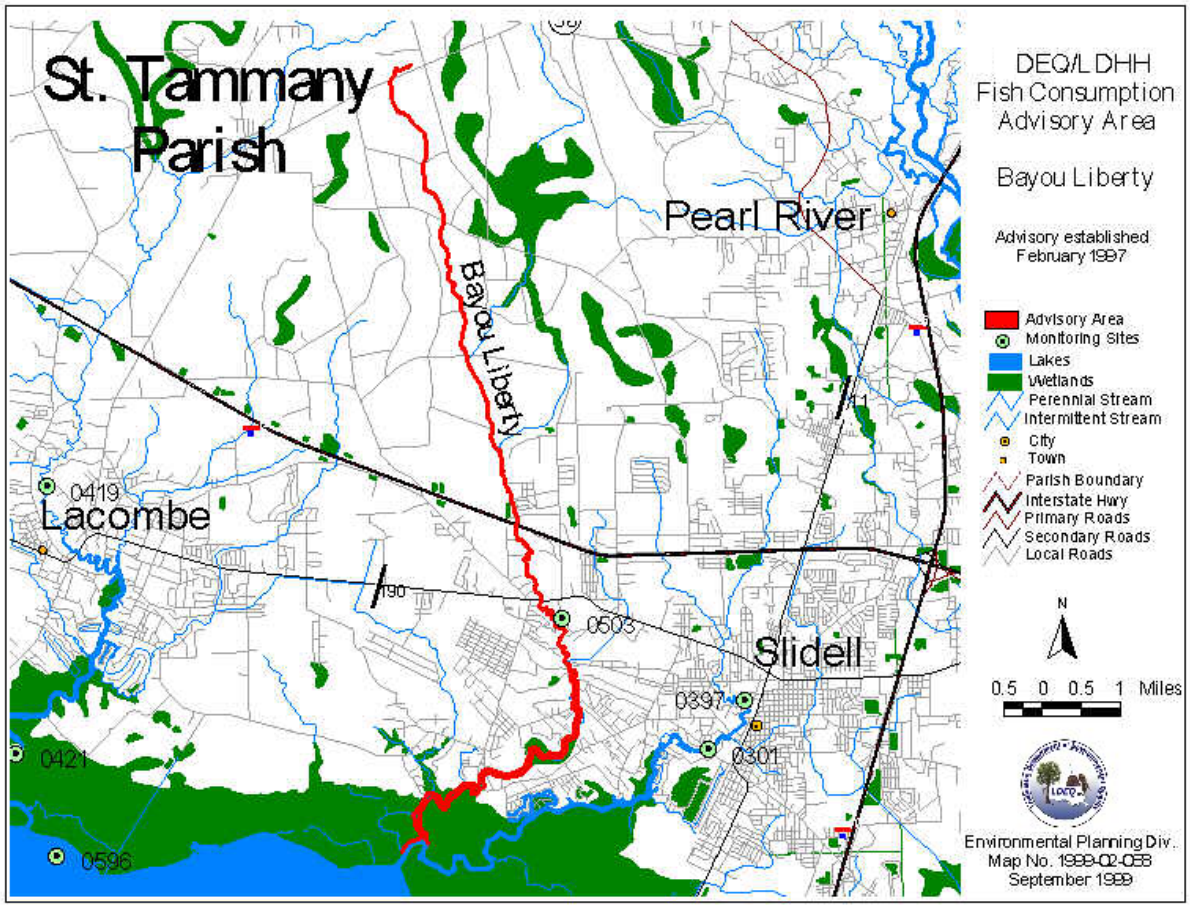
This advisory area includes Bayou DeSiard from its headwaters to its confluence with the Ouachita River in Ouachita Parish north of the City of Monroe. Sampling in this advisory area indicated that largemouth bass, buffalo, catfish, crappie (sac-a-lait), freshwater drum (gaspergou), and bowfin (choupique, grinnel) contained sufficiently high levels of mercury to warrant an advisory.

DHH, DEQ, and DWF advise that the following precautions be taken when eating fish taken from Bayou Desiard:

- **Women of childbearing age and children less than seven years of age SHOULD NOT CONSUME BOWFIN and should consume no more than ONE MEAL PER MONTH of all other species combined from this advisory area (a meal is considered to be half a pound of fish for adults and children).**

- **Other adults and children seven years of age and older SHOULD NOT CONSUME BOWFIN and should consume no more than FOUR MEALS PER MONTH of all other species combined from this advisory area (a meal is considered to be half a pound of fish for adults and children).**

Bayou Liberty in St. Tammany Parish



Bayou Liberty - the red line shows the extent of this advisory area relative to fish consumption

This current advisory supersedes a previous advisory issued for this water body by the state on January 31, 1997. The advisory area includes only Bayou Liberty east of Slidell from it's headwaters near Florenville to the mouth at Lake Ponchartrain. Sampling in the advisory area indicated that largemouth bass, crappie (sac-a-lait), freshwater drum (gaspergou), and redear sunfish contained mercury in sufficiently high levels to warrant an advisory.

DHH, DEQ, and DWF advise that the following precautions be taken when eating fish taken from Bayou Liberty:

- **Women of childbearing age and children less than seven years of age should consume no more than ONE MEAL PER MONTH of largemouth bass, crappie, freshwater drum, or redear sunfish combined from this advisory area (a meal is considered to be half a pound of fish for adults and children).**

- **Other adults and children seven years of age and older should consume no more than FOUR MEALS PER MONTH of largemouth bass, crappie, freshwater drum, or redear sunfish combined from this advisory area (a meal is considered to be half a pound of fish for adults and children).**

Bayou Louis in Catahoula Parish
No Map Available

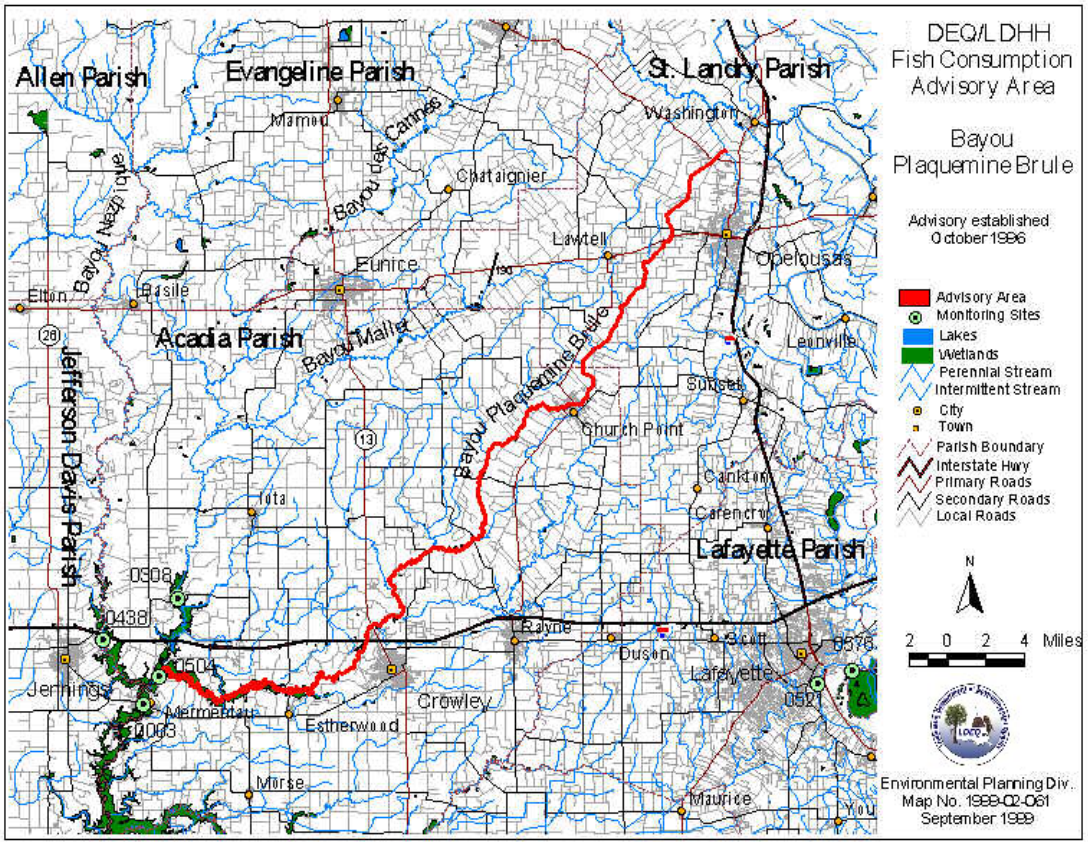
This advisory area includes Bayou Louis from its headwaters near Sicily Island to its confluence with the Ouachita River in Catahoula Parish near Harrisonburg, including Lovelace Lake. Sampling in the advisory area indicated that largemouth bass, buffalo, catfish, crappie (sac-a-lait), freshwater drum (gaspergou), and bowfin (choupique, grinnel) contained sufficiently high levels of mercury in fish to warrant an advisory.

DHH, DEQ, and DWF have jointly advised that the following precautions be taken when eating fish taken from Bayou Louis:

- **Women of childbearing age and children less than seven years of age SHOULD NOT CONSUME BOWFIN and should consume no more than ONE MEAL PER MONTH of all other species combined from this advisory area (a meal is considered to be half a pound of fish for adults and children).**

- **Other adults and children seven years of age and older SHOULD NOT CONSUME BOWFIN and should consume no more than FOUR MEALS PER MONTH of all other species combined from this advisory area (a meal is considered to be half a pound of fish for adults and children).**

Bayou Plaquemine Brule in Acadia and St. Landry Parishes



Bayou Plaquemine Brule - the red line shows the extent of this advisory area relative to fish consumption

This current advisory supersedes a previous advisory issued for this water body by the state in October of 1996. The advisory area includes Bayou Plaquemine Brule from its origin near Opelousas in St. Landry Parish to the junction with the Mermentau River near Jennings in Acadia Parish.

Sampling has indicated that largemouth bass, crappie (sac-a lait), freshwater drum (gaspergou), and bowfin taken from Bayou Plaquemine Brule near Jennings contained sufficiently high levels of mercury to warrant an advisory. DHH, DEQ, and DWF have jointly advised that the following precautions be taken when eating fish taken from Bayou Plaquemine Brule:

- **Women of childbearing age and children less than seven years of age SHOULD NOT CONSUME bowfin and should consume no more than ONE MEAL PER MONTH of largemouth bass, crappie, or freshwater drum combined from this advisory area (a meal is considered to be half a pound of fish for adults and children.)**

- **Other adults and children seven years of age or older should consume no more than TWO MEALS PER MONTH of bowfin and no more than FOUR MEALS PER MONTH of largemouth bass, crappie, or freshwater drum combined from this advisory area (a meal is considered to be half a pound of fish for adults and children).**

Big Alabama Bayou in Point Coupee, St. Martin and Iberville Parishes

No Map Available

This advisory area includes the Big Alabama Bayou for its entire length from the boat landing at Hwy 975 to its southern end near the Atchafalaya River Pilot Channel on the Sherbourne Wildlife Management Area southeast of Krotz Springs. Sampling in the advisory area has indicated that largemouth bass, crappie (sac-a-lait), bigmouth buffalo, freshwater drum (gaspergou), flathead catfish (Opelousas catfish) and bowfin (choupique, grinnel) contain sufficiently high levels of mercury to warrant and advisory.

DHH, DEQ, and DWF have jointly advised that the following precautions be taken when eating fish taken from Big Alabama Bayou:

- **Women of childbearing age and children less than seven years of age should consume no more than ONE MEAL PER MONTH of any species combined from this advisory area (a meal is considered to be half a pound of fish for adults and children).**

- **Other adults and children seven years of age and older should consume no more than TWO MEALS PER MONTH of catfish species and no more than FOUR MEALS PER MONTH of other species combined from this advisory area (a meal is considered to be half a pound of fish for adults and children).**

Black Bayou Lake in Ouachita Parish

No Map Available

This advisory area includes Black Bayou Lake in Ouachita Parish northeast of the City of Monroe. Sampling in the advisory area indicated that bowfin (choupique, grinnel) contained sufficiently high levels of mercury to warrant an advisory.

DHH, DEQ, and DWF advise that the following precautions be taken when eating fish taken from Black Bayou Lake:

- **Women of childbearing age and children less than seven years of age SHOULD NOT CONSUME BOWFIN from this advisory area.**

- **Other adults and children seven years of age and older should consume no more than ONE MEAL PER MONTH of bowfin from this advisory area (a meal is considered to be half a pound of fish for adults and children).**

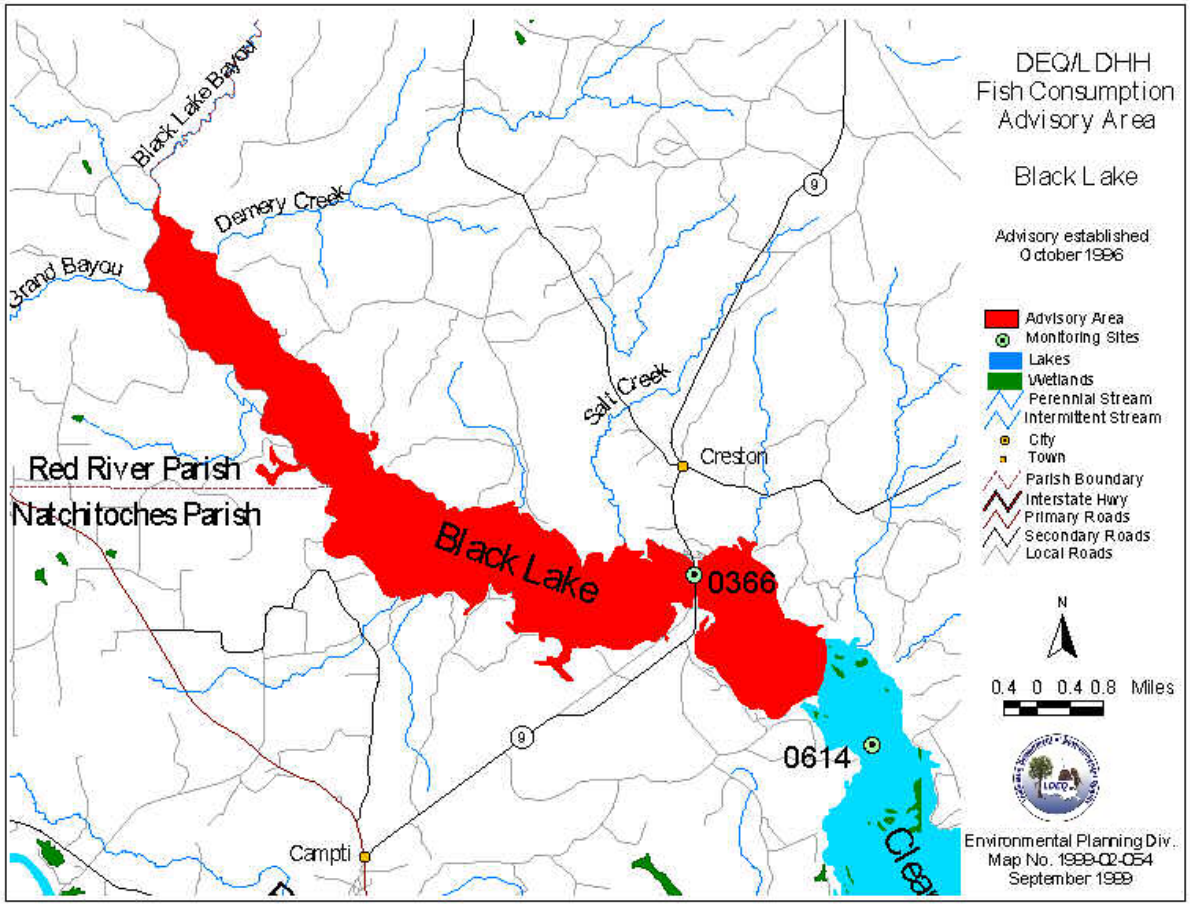
Black Lake in Natchitoches Parish

This current advisory supersedes a previous advisory issued for this water body by the state in October of 1996. This advisory includes Black Lake in Natchitoches Parish north of Clarence.

Sampling in this advisory area indicated that largemouth bass, white bass, crappie (sac-a-lait), freshwater drum (gaspergou) and bowfin (choupique, grinnel) contained sufficiently high levels of mercury to warrant an advisory. DHH, DEQ, and DWF have jointly advised that the following precautions be taken when eating fish taken from Black Lake:

- **Women of childbearing age and children less than seven years of age SHOULD NOT CONSUME BOWFIN and should consume no more than ONE MEAL PER MONTH of largemouth bass, white bass, crappie, or freshwater drum combined from this advisory area (a meal is considered to be half a pound of fish for adults and children).**

- **Other adults and children seven years of age and older should consume no more than TWO MEALS PER MONTH of bowfin and no more than FOUR MEALS PER MONTH of largemouth bass, white bass, crappie, or freshwater drum combined from this advisory area (a meal is considered to be half a pound of fish for adults and children).**



Black Lake - the red area shows the extent of this advisory area relative to fish consumption

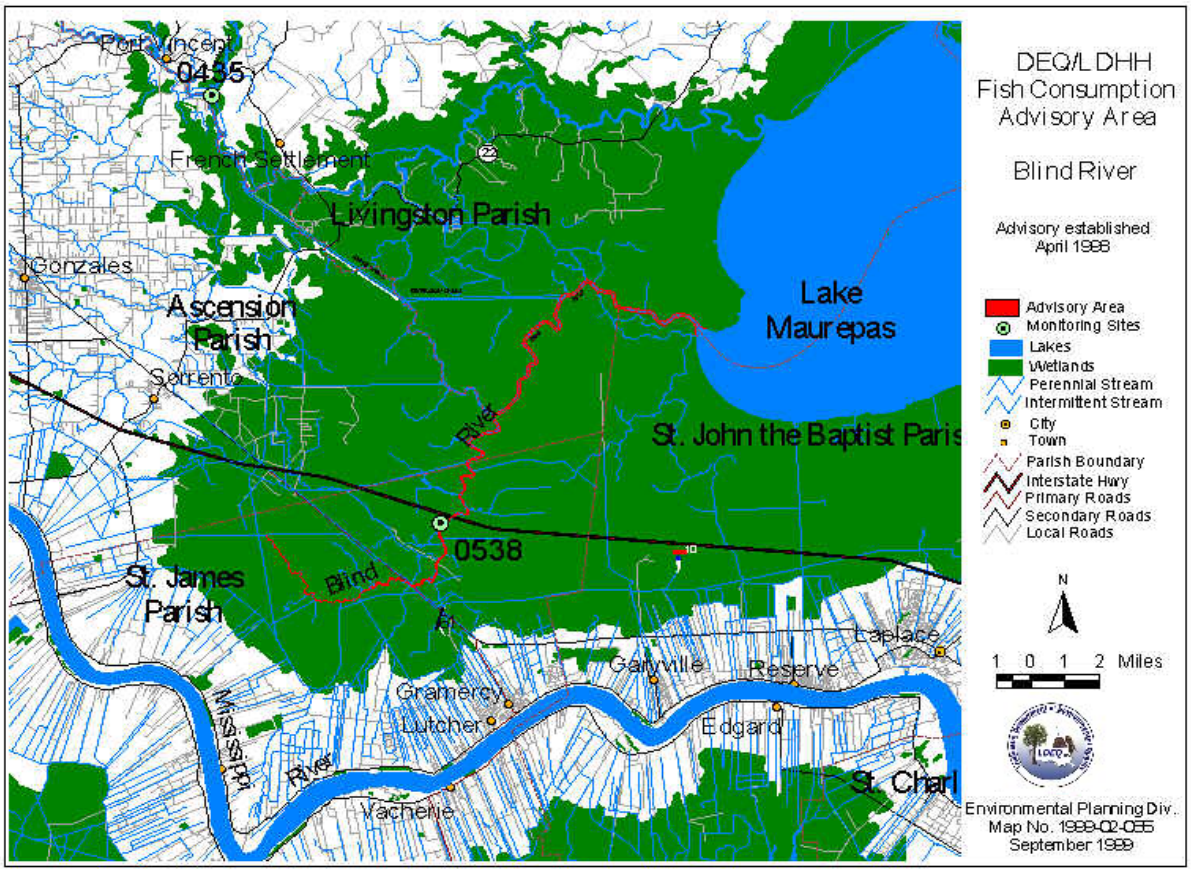
Blind River in St. James, Ascension, Livingston and St. John the Baptist Parishes

This current advisory supersedes a previous advisory issued for this water body by the state on April 23, 1998. This advisory includes all of Blind River from its headwaters northwest of Gramercy in St. James Parish to the mouth at Lake Maurepas in St. John the Baptist Parish.

Sampling in this advisory area indicated that bowfin (choupique, grinnel) contained sufficiently high levels of mercury to warrant an advisory. DHH, DEQ, and DWF have jointly advised that the following precautions be taken when eating fish taken from the Blind River:

- **Women of childbearing age and children less than seven years of age should consume no more than ONE MEAL PER MONTH of bowfin from this advisory area (a meal is considered to be half a pound of fish for adults and children).**

- **Other adults and children seven years of age and older should consume no more than FOUR MEALS PER MONTH of bowfin from this advisory area (a meal is considered to be half a pound of fish for adults and children).**



Blind River - the red line shows the extent of this advisory area relative to fish consumption

Boeuf River in Caldwell, Franklin, Richland and Catahoula Parishes

No Map Available

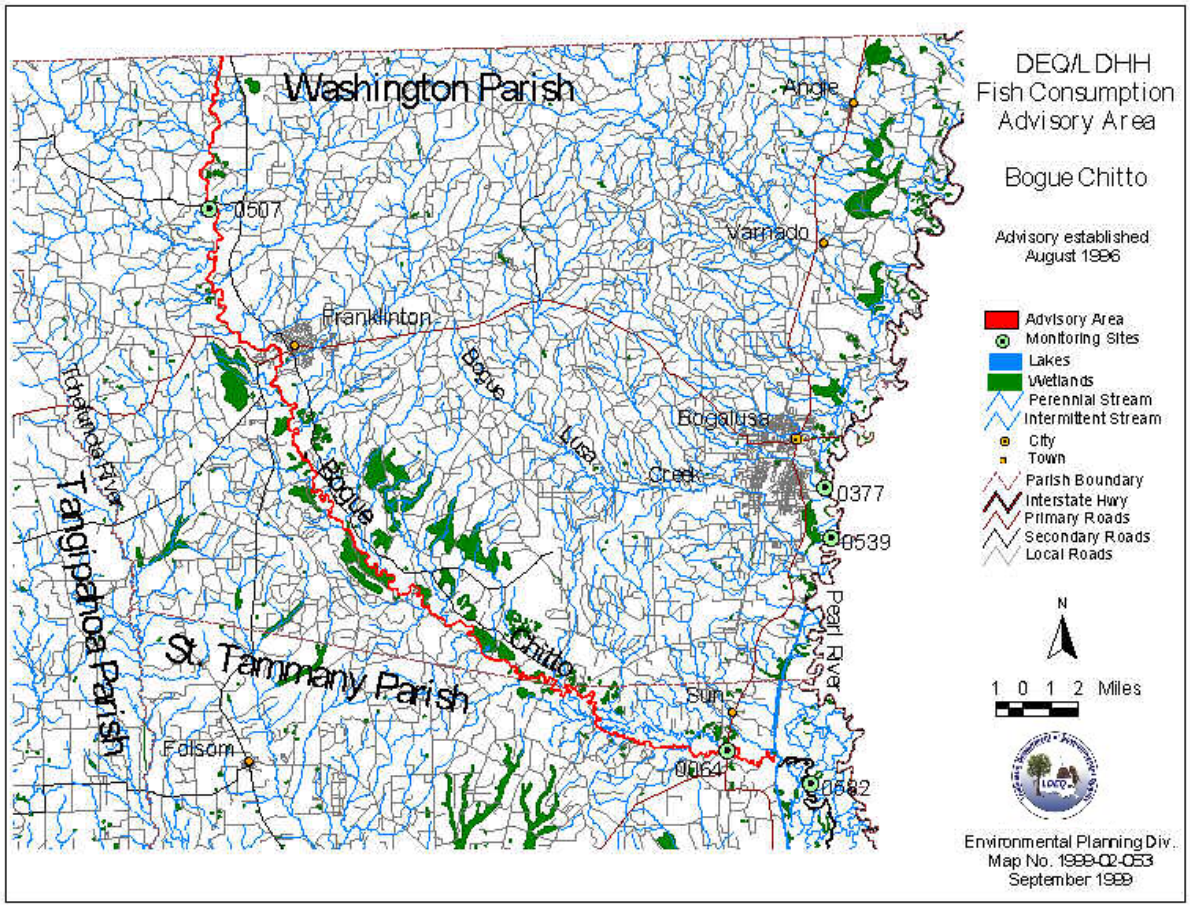
This advisory area includes the Boeuf River from the confluence with Lake Lafourche east of Oak Ridge on the Morehouse/Richland parish line to the confluence with the Ouachita River north of Harrisonburg in Catahoula Parish.

Sampling in this advisory area indicated that largemouth bass, buffalo, catfish, crappie (sac-a-lait), freshwater drum (gaspergou), and bowfin (choupique, grinnel) contained sufficiently high levels of mercury to warrant an advisory. DHH, DEQ, and DWF have jointly advised that the following precautions be taken when eating fish taken from the Boeuf River:

- **Women of childbearing age and children less than seven years of age SHOULD NOT CONSUME BOWFIN and should consume no more than ONE MEAL PER MONTH of all other species combined from this advisory area (a meal is considered to be half a pound of fish for adults and children).**

- **Other adults and children seven years of age and older SHOULD NOT CONSUME BOWFIN and should consume no more than FOUR MEALS PER MONTH of all other species combined from this advisory area (a meal is considered to be half a pound of fish for adults and children).**

Bogue Chitto River in Washington and St. Tammany Parishes



Bogue Chitto River - the red line shows the extent of this advisory area relative to fish consumption

This current advisory supersedes a previous advisory issued for this water body by the state in August of 1996. This advisory area includes the Bogue Chitto River from the Louisiana/Mississippi state line in Washington Parish near Warnerton to its confluence with the Pearl River Navigation Canal in St. Tammany Parish near Sun.

Sampling in this advisory area has indicated that largemouth bass and bowfin (choupique, grinnel) contained sufficiently high levels of mercury to warrant an advisory. DHH, DEQ, and DWF advise that the following precautions be taken when eating fish taken from the Bogue Chitto River:

- **Women of childbearing age and children less than seven years of age should consume no more than ONE MEAL PER MONTH of bass or bowfin combined from this advisory area (a meal is considered to be half a pound of fish for adults and children).**

- **Other adults and children seven years of age and older should consume no more than FOUR MEALS PER MONTH of bass or bowfin combined from this advisory area (a meal is considered to be half a pound of fish for adults and children).**

Bogue Falaya and Tchefuncta Rivers in St. Tammany Parish
No Map Available

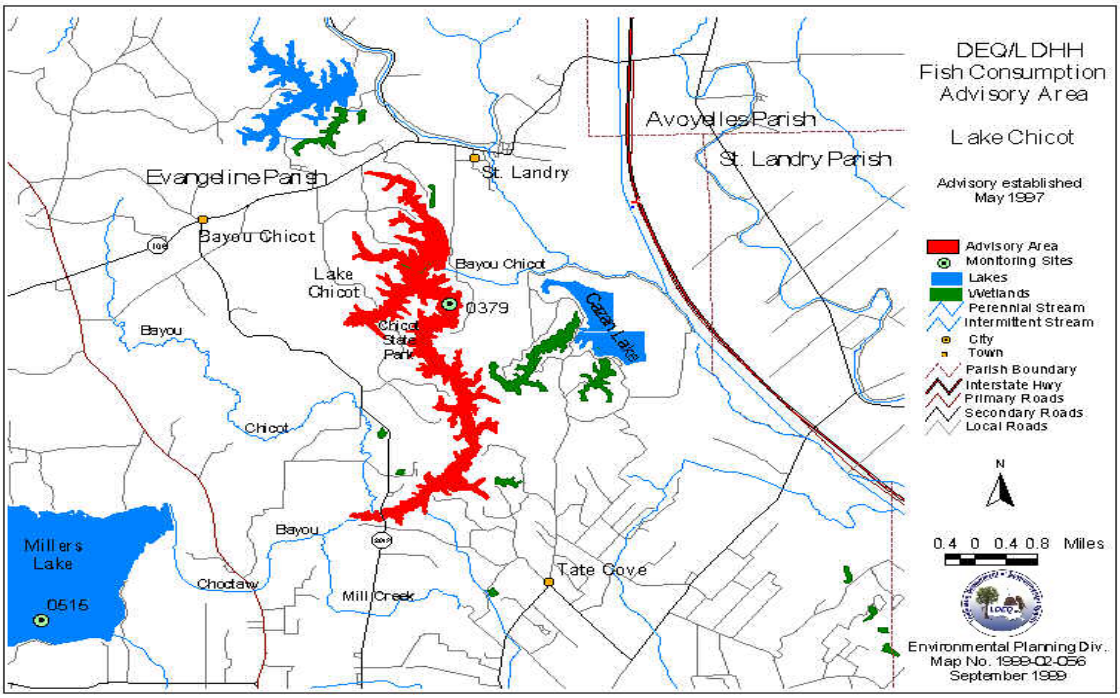
This advisory area includes the Bogue Falaya River from its headwaters near Folsom to its confluence with the Tchefuncte River at Covington, and the Tchefuncte River from its headwaters to Lake Pontchartrain. All oxbow lakes associated with these sections of the Bogue Falaya and the Tchefuncte Rivers are included in this advisory.

Sampling in this advisory area indicated that largemouth bass, spotted bass, crappie (sac-a-lait), catfish, and freshwater drum (gaspergou) contained sufficiently high levels of mercury to warrant an advisory. DHH, DEQ, and DWF have jointly advised that the following precautions be taken when eating fish taken from the Bogue Falaya and Tchefuncte Rivers:

- **Women of childbearing age and children less than seven years of age SHOULD NOT CONSUME largemouth bass and crappie and should consume no more than ONE MEAL PER MONTH of freshwater drum, spotted bass, or catfish combined from this advisory area (a meal is considered to be half a pound of fish for adults and children).**

- **Other adults and children seven years of age and older should consume no more than TWO MEALS PER MONTH of largemouth bass and crappie and no more than FOUR MEALS PER MONTH of freshwater drum, spotted bass, or catfish combined from this advisory area (a meal is considered to be half a pound of fish for adults and children).**

Chicot Lake in Evangeline Parish



Chicot Lake - the red line shows the extent of this advisory area relative to fish consumption

This current advisory supersedes a previous advisory issued for this water body by the state in May of 1997. The advisory area includes only Chicot Lake in Evangeline Parish.

Sampling in this advisory area indicated that largemouth bass and bowfin (choupique, grinnel) contained sufficiently high levels of mercury to warrant an advisory. DHH, DEQ, and DWF have jointly advised that the following precautions be taken when eating fish taken from Chicot Lake:

- **Women of childbearing age and children less than seven years of age SHOULD NOT CONSUME BOWFIN and should consume no more than ONE MEAL PER MONTH of largemouth bass from this advisory area (a meal is considered to be half a pound of fish for adults and children).**

- **Other adults and children seven years of age and older should consume no more than TWO MEALS PER MONTH of bowfin and no more than FOUR MEALS PER MONTH of largemouth bass from this advisory area (a meal is considered to be half a pound of fish for adults and children).**

Corney Lake in Claiborne Parish
No Map Available

This advisory area includes only Corney Lake near Scottsville in Claiborne Parish. Sampling in the advisory area indicated that largemouth bass and bowfin (choupique, grinnel) contained sufficiently high levels of mercury to warrant an advisory.

DHH, DEQ, and DWF have jointly advised that the following precautions be taken when eating fish taken from Corney Lake:

- **Women of childbearing age and children less than seven years of age should consume no more than ONE MEAL PER MONTH of largemouth bass or bowfin combined from this advisory area (a meal is considered to be half a pound of fish for adults and children).**

- **Other adults and children seven years of age and older should consume no more than FOUR MEALS PER MONTH of largemouth bass or bowfin combined from this advisory area (a meal is considered to be half a pound of fish for adults and children).**

Grand Bayou Reservoir in Red River Parish
No Map Available

This advisory area includes Grand Bayou Reservoir only, also known as John K. Kelly Reservoir, in Red River Parish.

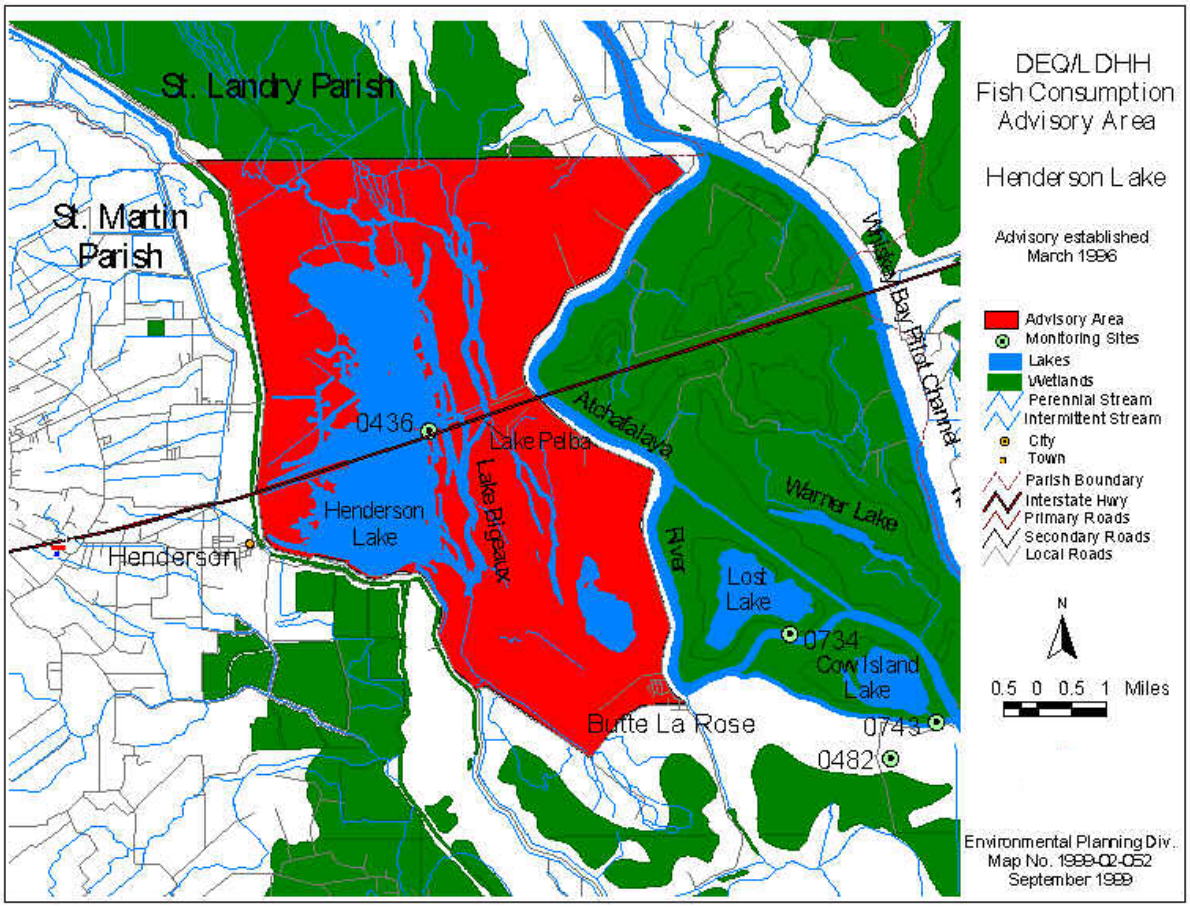
Sampling in this advisory area indicated that largemouth bass and bowfin (choupique, grinnel) contain sufficiently high levels of mercury to warrant an advisory. DHH, DEQ, and DWF advise that the following precautions be taken when eating fish taken from Grand Bayou Reservoir:

- **Women of childbearing age and children less than seven years of age SHOULD NOT CONSUME BOWFIN and should consume no more than**

ONE MEAL PER MONTH of largemouth bass from this advisory area (a meal is considered to be half a pound of fish for adults and children).

- **Other adults and children seven years of age and older should consume no more than TWO MEALS PER MONTH of largemouth bass or bowfin combined from this advisory area (a meal is considered to be half a pound of fish for adults and children).**

Henderson Lake in St. Martin Parish



Henderson Lake - the red area shows the extent of this advisory area relative to fish consumption

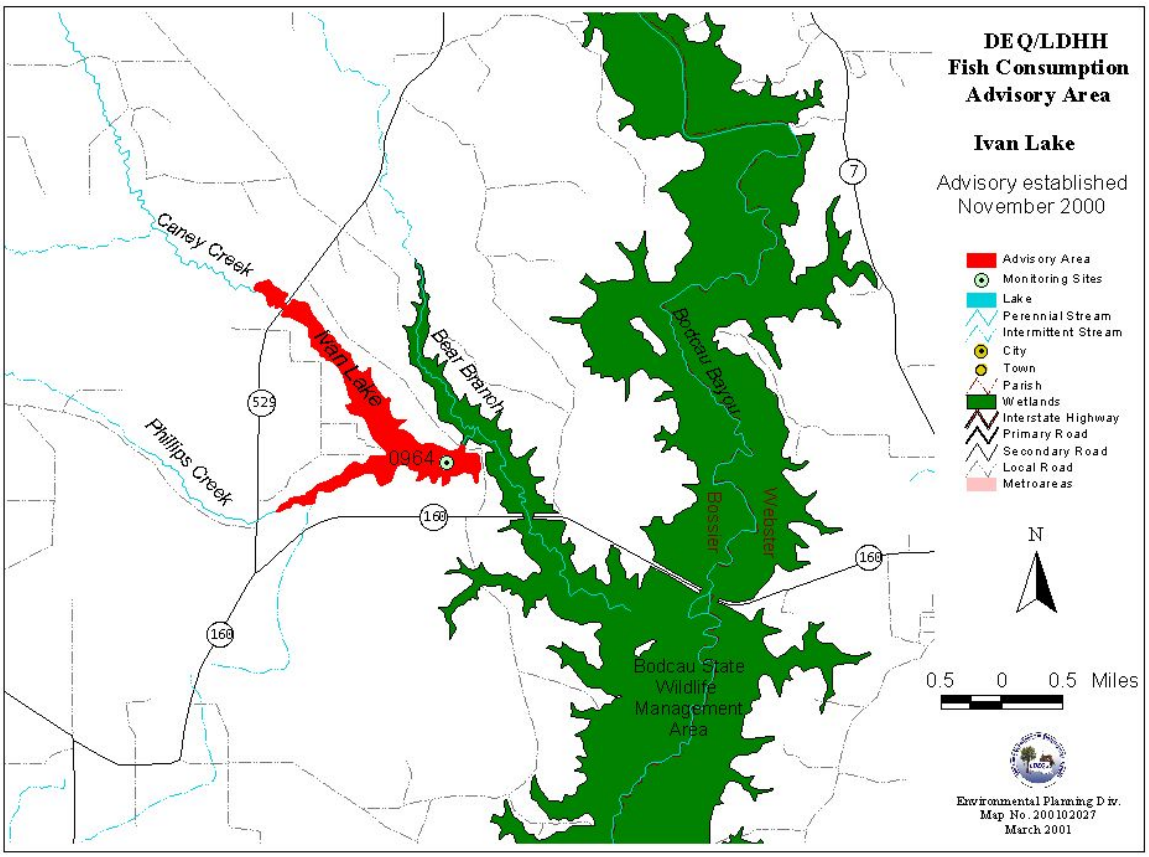
This current advisory supersedes a previous advisory issued for this water body by the state on January 31, 1996. The advisory area includes Henderson Lake, Lake Bigeux, and all waters within the area bounded on the north by the St. Landry/St. Martin Parish Line, on the east by the West Atchafalaya River levee (or Hwy. 3177), on the south by Hwy. 3177 and on the west by the West Atchafalaya Basin levee in St. Martin Parish.

Sampling in this advisory area indicated that largemouth bass, crappie (sac-a-lait), and freshwater drum (gaspergou) contained sufficiently high levels of mercury to warrant an advisory. DHH, DEQ, and DWF have jointly advised that the following precautions be taken when eating fish taken from Henderson Lake:

- **Women of childbearing age and children less than seven years of age should consume no more than ONE MEAL PER MONTH of largemouth bass, crappie, or freshwater drum combined from this advisory area (a meal is considered to be half a pound of fish for adults and children).**

- **Other adults and children seven years of age and older should consume no more than FOUR MEALS PER MONTH of largemouth bass, crappie, or freshwater drum combined from this advisory area (a meal is considered to be half a pound of fish for adults and children).**

Ivan Lake in Bossier Parish



Ivan Lake - the red area shows the extent of this advisory area relative to fish consumption

This current advisory supersedes a previous advisory issued for this water body by the state on November 20, 2000. The advisory area includes only Ivan Lake in Bossier Parish northeast of the City of Benton.

Sampling in this advisory area indicated that largemouth bass and bowfin (choupique, grinnel) contained sufficiently high levels of mercury to warrant an advisory. DHH, DEQ, and DWF have jointly advised that the following precautions be taken when eating fish taken from Ivan Lake:

- **Women of childbearing age and children less than seven years of age SHOULD NOT CONSUME BOWFIN and should consume no more than ONE MEAL PER MONTH of largemouth bass from this advisory area (a meal is considered to be half a pound of fish for adults and children).**

- **Other adults and children seven years of age and older should consume no more than TWO MEALS PER MONTH of bowfin and no more than FOUR MEALS PER MONTH of largemouth bass from this advisory area (a meal is considered to be half a pound of fish for adults and children).**

Kepler Creek Lake in Bienville Parish

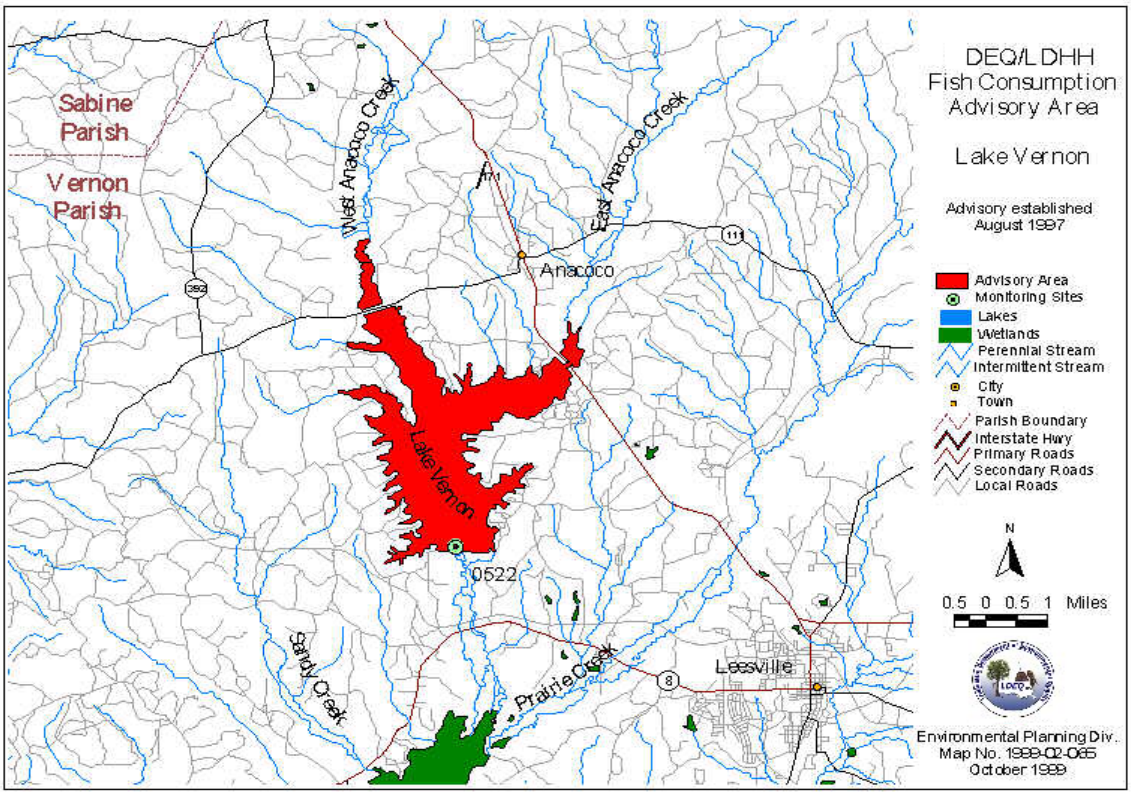
No Map Available

This advisory area includes Kepler Creek Lake only in Bienville Parish. Sampling in the advisory area indicated that bowfin (choupique, grinnel) contained sufficiently high levels of mercury to warrant an advisory. DHH, DEQ, and DWF have jointly advised that the following precautions be taken when eating fish taken from Kepler Creek Lake:

- **Women of childbearing age and children less than seven years of age SHOULD NOT CONSUME BOWFIN from this advisory area.**

- **Other adults and children seven years of age and older should consume no more than ONE MEAL PER MONTH of bowfin from this advisory area (a meal is considered to be half a pound of fish for adults and children).**

Lake Vernon in Vernon Parish



Lake Vernon - the red area shows the extent of this advisory area relative to fish consumption

This current advisory supersedes a previous advisory issued for this water body by the state in August of 1997. This advisory area includes only Lake Vernon in Vernon Parish.

Sampling in this advisory area indicated that largemouth bass, flathead catfish (Opelousas catfish), redear and bluegill sunfish (bream) contained sufficiently high levels of mercury to warrant an advisory. DHH, DEQ, and DWF have jointly advised that the following precautions be taken when eating fish taken from Lake Vernon:

- **Women of childbearing age and children less than seven years of age should consume no more than ONE MEAL PER MONTH of largemouth bass, flathead catfish, redear or bluegill sunfish combined from this advisory area (a meal is considered to be half a pound of fish for adults and children).**

- **Other adults and children seven years of age and older should consume no more than FOUR MEALS PER MONTH of largemouth bass, flathead catfish, redear or bluegill sunfish combined from this advisory area (a meal is considered to be half a pound of fish for adults and children).**

Saline-Larto Complex east of Alexandria

No Map Available

This current advisory supersedes a previous advisory issued for Catahoula Lake and the Little River by the state on November 20, 2000. Thisadvisory area includes all the water bodies associated with the Saline-Larto Complex within the parishes of Avoyelles, Catahoula, Concordia, Grant, Lasalle, and Rapides, including the following streams and their tributaries:

Big Bushley Creek, Big Creek, Big Saline Bayou, Black River, Brushley Bayou, Bushley Creek, Catahoula Lake, Catahoula Lake Diversion Canal, Cross Bayou, Larto Lake, Little River, Muddy Bayou, Old River, Open Bayou, Saline Bayou, Saline Lake and Shad Lake.

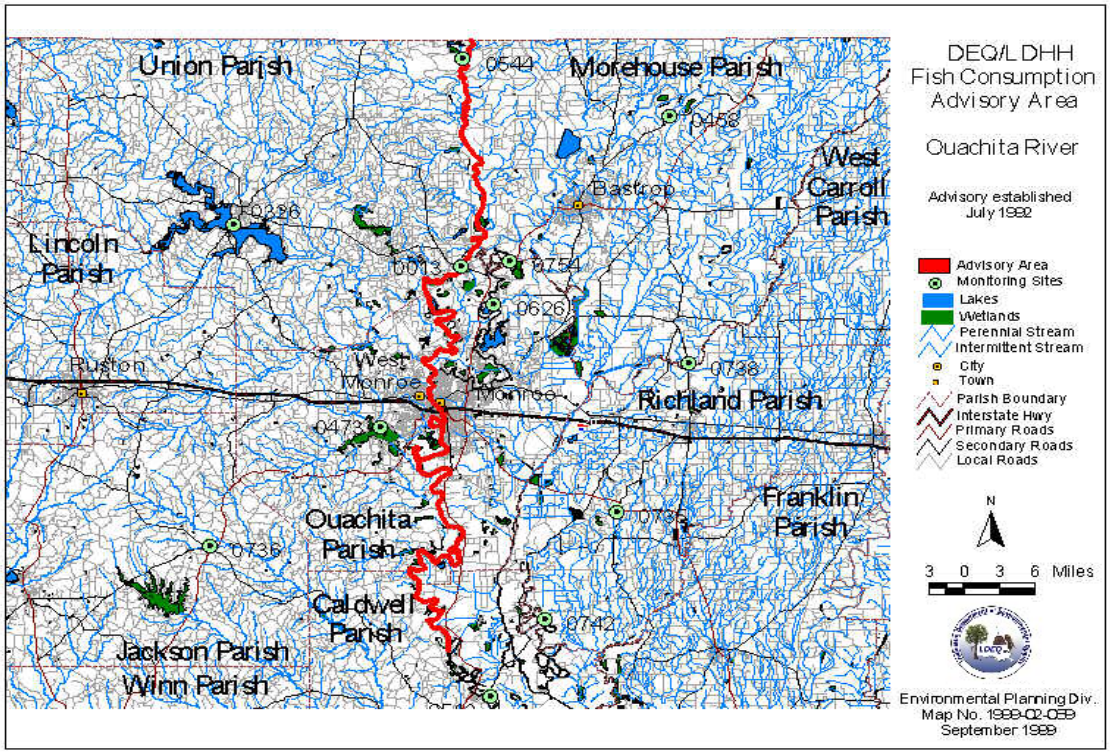
This advisory also includes all water bodies within the Dewey W. Wills Wildlife Management Area and the Catahoula National Wildlife Refuge.

Sampling in this advisory area indicated that largemouth bass, white bass, white crappie (sac-a-lait, white perch), flathead catfish (Opelousas catfish), freshwater drum (gaspergou), and bowfin (choupique, grinnel) contained sufficiently high levels of mercury to warrant an advisory. DHH, DEQ, and DWF advise that the following precautions be taken when eating fish taken from these areas:

- **Women of childbearing age and children less than seven years of age SHOULD NOT CONSUME largemouth bass, white bass, freshwater drum, flathead catfish, or bowfin and should consume no more than TWO MEALS PER MONTH of white crappie from thisadvisory area (a meal is considered to be half a pound of fish for adults and children).**

- **Other adults and children seven years of age and older should consume no more than TWO MEALS PER MONTH of largemouth bass, white bass, freshwater drum, flathead catfish, or bowfin and no more than FOUR MEALS PER MONTH of white crappie from this advisory area (a meal is considered to be half a pound of fish for adults and children).**

Ouachita River in northeast Louisiana



Ouachita River - the red area shows the extent of this advisory area relative to fish consumption

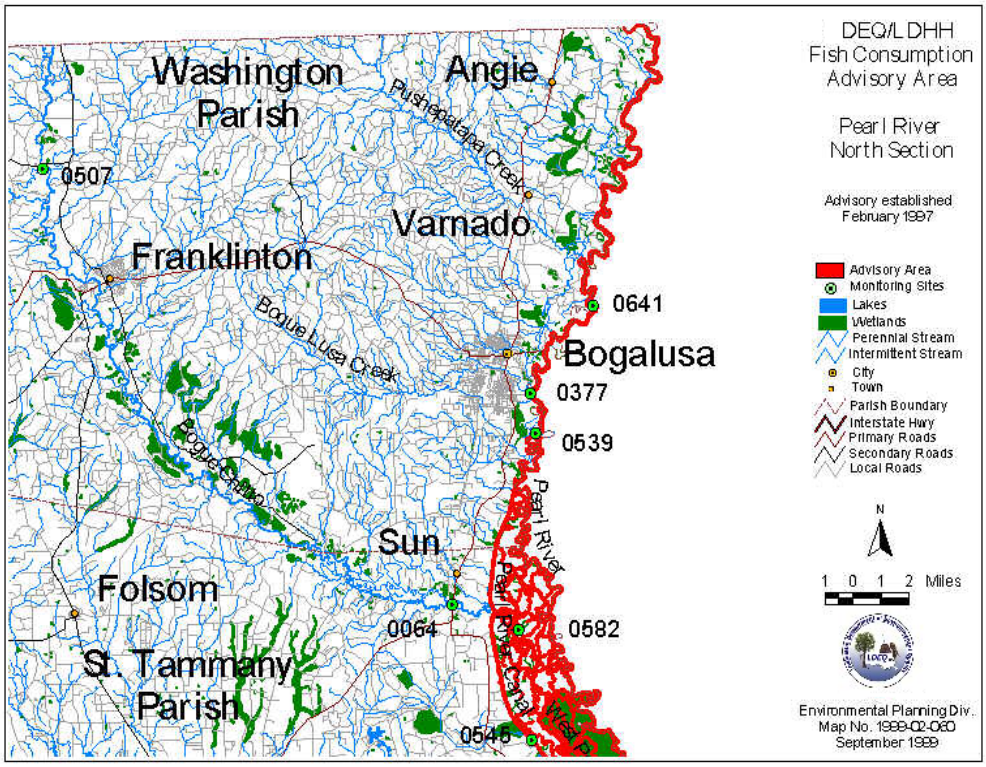
This advisory supersedes a previous advisory issued for this water body by the state in July of 1992. This advisory area includes the Ouachita River from the Louisiana/Arkansas border to the confluence of the Tensas River including any lakes that are inside the levee system or within the Ouachita River flood plain.

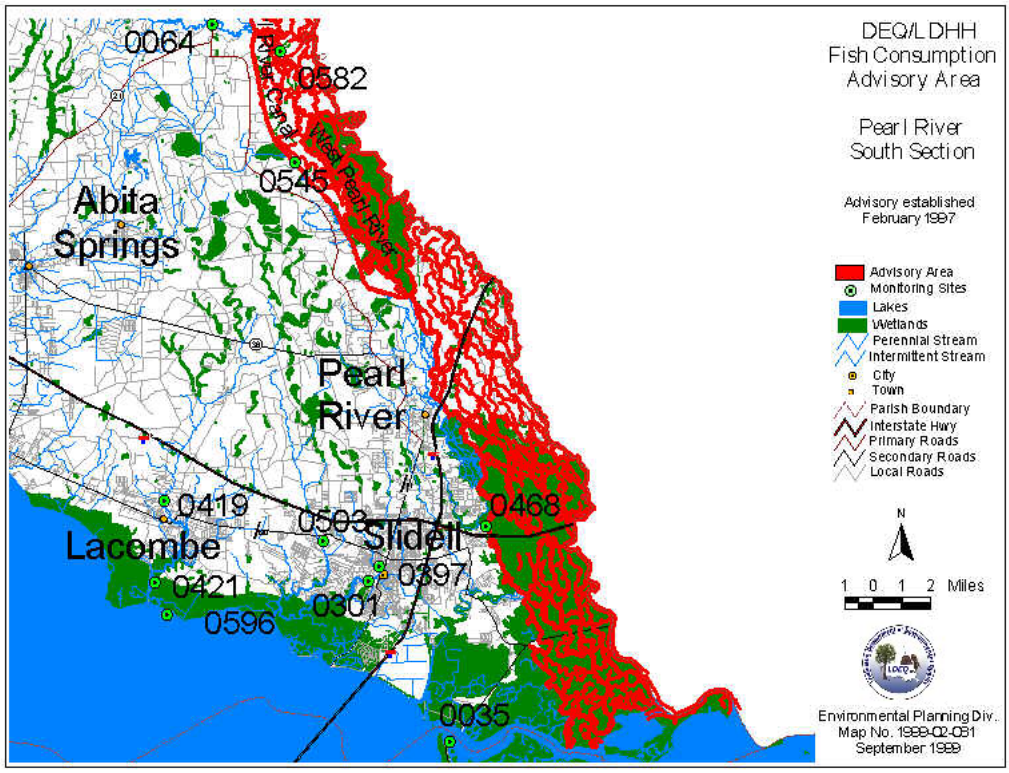
Sampling in this advisory area indicated that largemouth bass, buffalo, catfish, crappie (sac-a-lait), freshwater drum (gaspergou), and bowfin (choupique, grinnel) contained sufficiently high levels of mercury to warrant an advisory. DHH, DEQ, and DWF advise that the following precautions be taken when eating fish taken from the Ouachita River:

- **Women of childbearing age and children less than seven years of age SHOULD NOT CONSUME BOWFIN and should consume no more than ONE MEAL PER MONTH of all other species combined from this advisory area (a meal is considered to be half a pound of fish for adults and children).**

- **Other adults and children seven years of age and older SHOULD NOT CONSUME BOWFIN and should consume no more than FOUR MEALS PER MONTH of all other species combined from this advisory area (a meal is considered to be half a pound of fish for adults and children).**

Pearl River in Washington and St. Tammany Parishes





Pearl River, north and south sections - the red area shows the extent of this advisory area relative to fish consumption

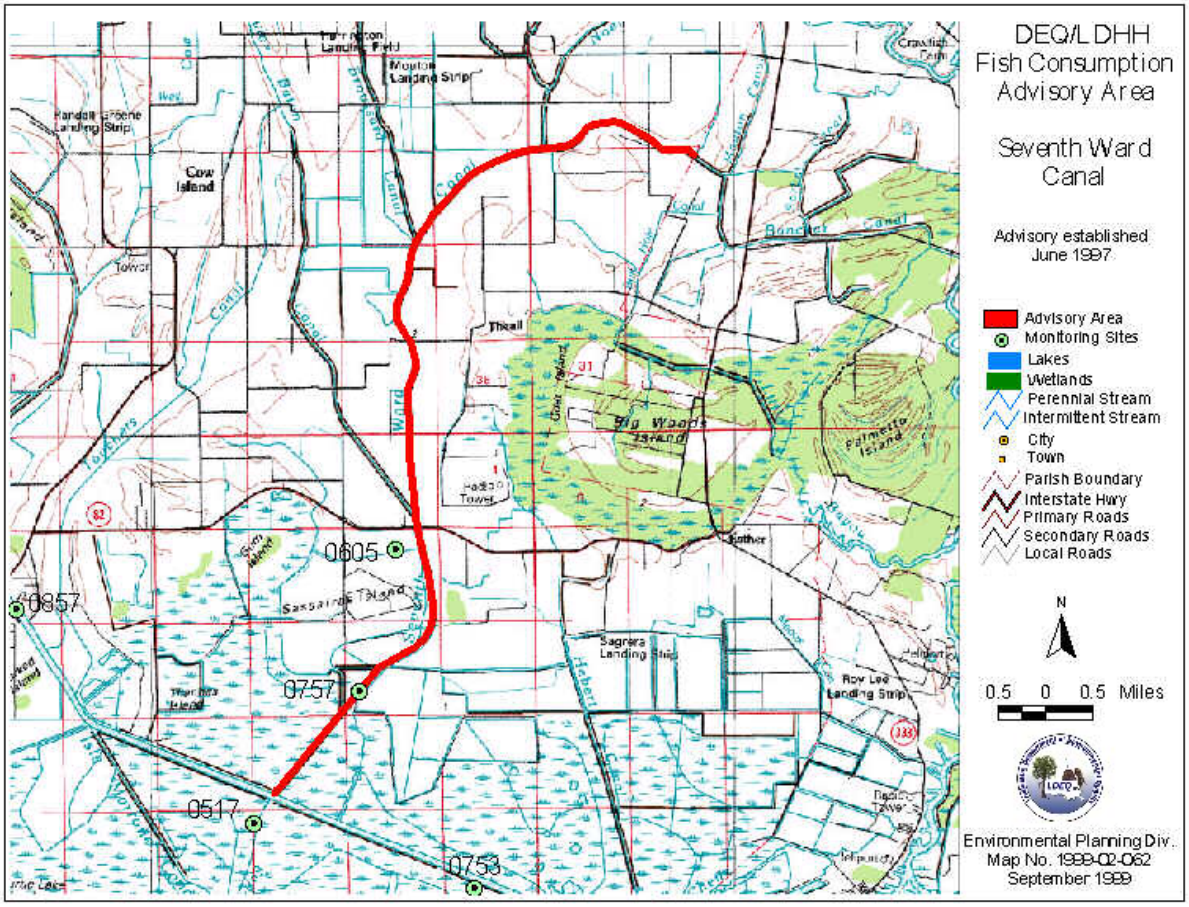
This advisory supersedes a previous advisory issued for this water body by the state on January 31, 1997. This advisory area includes the entire length of the Pearl River in Louisiana.

Sampling in this advisory area indicated that largemouth bass, bigmouth buffalo, catfish, freshwater drum (gaspergou), and bowfin (choupique, grinnel) contain sufficiently high levels of mercury to warrant an advisory. DHH, DEQ, and DWF advise that the following precautions be taken when eating fish taken from the Pearl River:

- **Women of childbearing age and children less than seven years of age SHOULD NOT CONSUME BOWFIN and should consume no more than ONE MEAL PER MONTH of bass, bigmouth buffalo, or freshwater drum combined from this advisory area (a meal is considered to be half a pound of fish for adults and children).**

- **Other adults and children seven years of age and older SHOULD NOT CONSUME BOWFIN and should consume no more than FOUR MEALS PER MONTH of bass, bigmouth buffalo, or freshwater drum combined from this advisory area (a meal is considered to be half a pound of fish for adults and children).**

Seventh Ward Canal in Vermilion Parish



Seventh Ward Canal - the red area shows the extent of this advisory area relative to fish consumption

This current advisory supersedes a previous advisory issued for this water body by the state in July of 1997. This advisory area includes only the Seventh Ward Canal southwest of Abbeville in Vermilion Parish.

Sampling in this advisory area indicated that flathead catfish (Opelousas catfish), white crappie (sac-a-lait, white perch), freshwater drum (gaspergou), and bowfin (choupique, grinnel) contained

sufficiently high levels of mercury to warrant an advisory. DHH, DEQ, and DWF have jointly advised that the following precautions be taken when eating fish taken from the Seventh Ward Canal:

- **Women of childbearing age and children less than seven years of age should consume no more than ONE MEAL PER MONTH of flathead catfish, white crappie, freshwater drum or bowfin combined from this advisory area (a meal is considered to be half a pound of fish for adults and children).**

- **Other adults and children seven years of age and older should consume no more than FOUR MEALS PER MONTH of flathead catfish, white crappie, freshwater drum or bowfin combined from this advisory area (a meal is considered to be half a pound of fish for adults and children).**

The Tickfaw River Basin in St. Helena, Livingston and Tangipahoa Parishes

No Map Available

This advisory supersedes a previous advisory issued for this water body by the state on July 8, 2002. This advisory area includes the following bodies of water: the Tickfaw River from the Mississippi-Louisiana state line to Lake Maurepas; the Natalbany River; the Blood River; Lizard Creek; and Ponchatoula Creek.

Sampling in this advisory area indicated that freshwater drum (gaspergou), largemouth bass, bowfin (choupique, grinnel), and white crappie (sac-a-lait, white perch) contained sufficiently high levels of mercury to warrant an advisory. The DHH, DEQ, and DWF have jointly advised that the following precautions be taken when eating fish taken from the Tickfaw River drainage basin:

- **Women of childbearing age and children less than seven years of age should consume no more than ONE MEAL PER MONTH of freshwater drum, largemouth bass, bowfin, or white crappie combined from this advisory area (a meal is considered to be half a pound of fish for adults and children).**

- **Other adults and children seven years of age and older should consume no more than FOUR MEALS PER MONTH of freshwater drum, largemouth bass, bowfin, or white crappie combined from this advisory area (a meal is considered to be half a pound of fish for adults and children).**

Tangipahoa River in Tangipahoa Parish

No Map Available

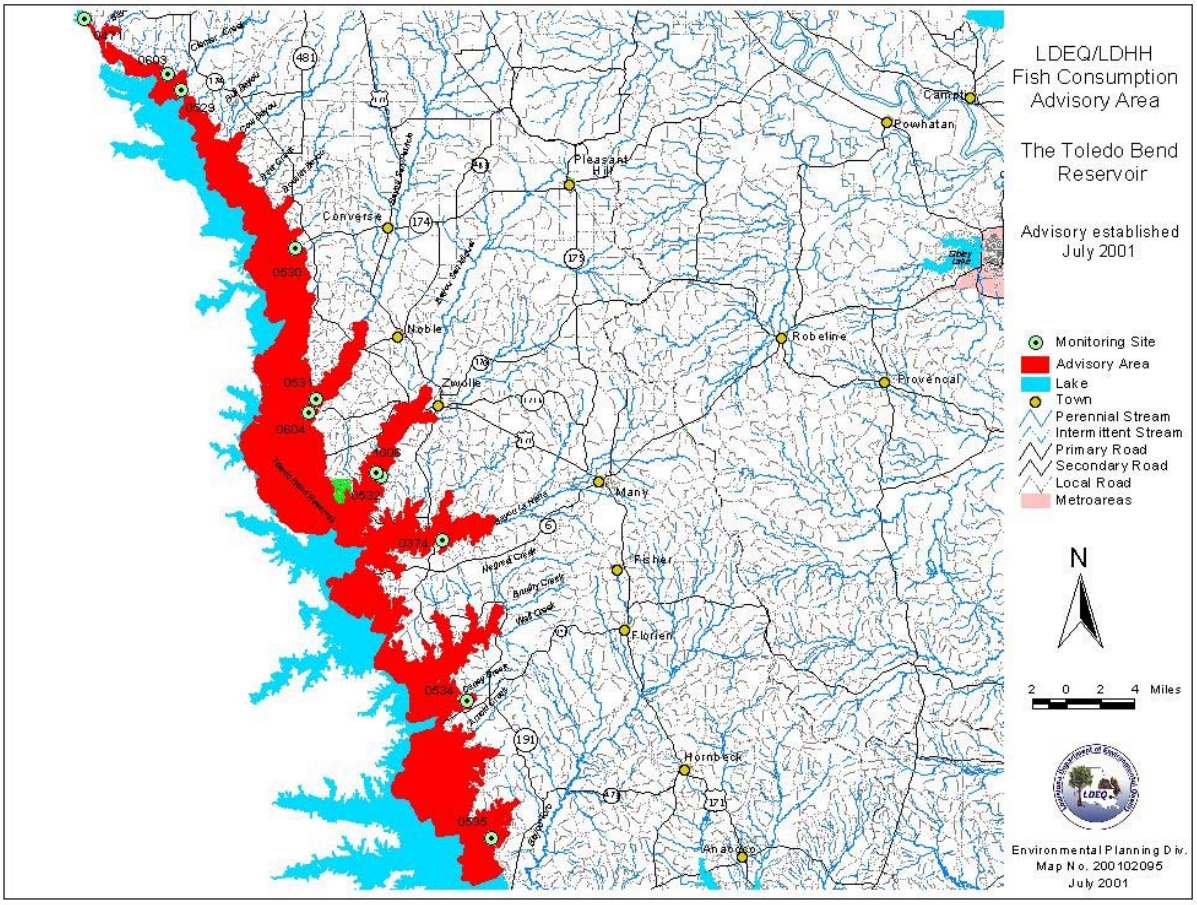
This advisory area includes the Tangipahoa River from the Louisiana/Mississippi state line to Lake Pontchartrain. Sampling in this advisory area indicated that largemouth bass, spotted bass, flathead catfish (Opelousas catfish), freshwater drum (gaspergou), and bowfin (choupique, grinnel) contained sufficiently high levels of mercury to warrant an advisory. DHH, DEQ, and DWF advise that the following precautions be taken when eating fish taken from the Tangipahoa River:

- **Women of childbearing age and children less than seven years of age should consume no more than ONE MEAL PER MONTH of largemouth bass, spotted bass, flathead catfish, freshwater drum, or bowfin combined from this advisory area (a meal is considered to be**

half a pound of fish for adults and children).

- **Other adults and children seven years of age and older should consume no more than FOUR MEALS PER MONTH of largemouth bass, spotted bass, flathead catfish, freshwater drum, or bowfin combined from this advisory area (a meal is considered to be half a pound of fish for adults and children).**

Toledo Bend Reservoir



Toledo Bend Reservoir - the red area shows the extent of this advisory area relative to fish consumption

This current advisory supersedes a previous advisory issued for this water body by the state on July 19, 2001. This advisory area includes the Toledo Bend Reservoir **north** of the Sabine River Authority Recreation Site 15 located at Pleasure Point Road. The waters south of Recreation Site 15 (including South Toledo Bend State Park) are not included in this advisory.

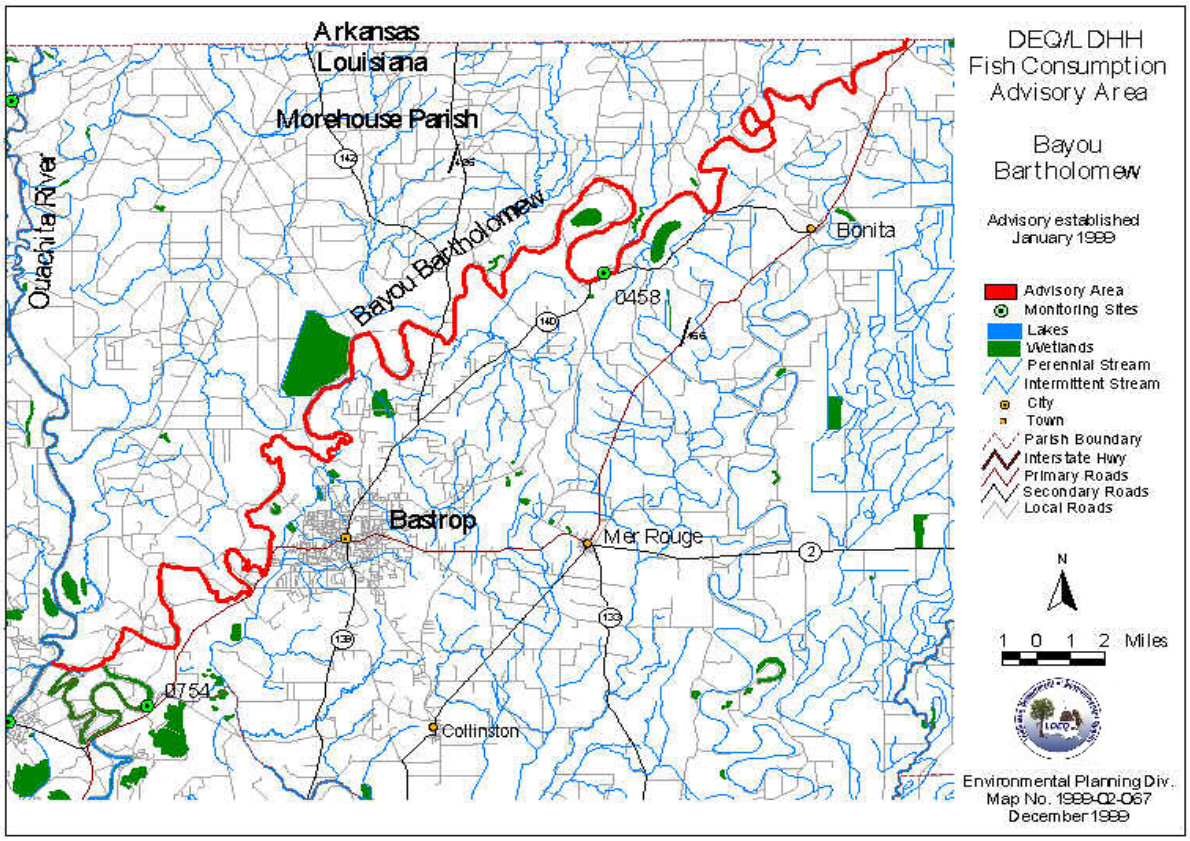
Sampling in this advisory area indicated that largemouth bass, freshwater drum (gaspergou), and bowfin (choupique, grinnel) contained sufficiently high levels of mercury to warrant an advisory. DHH, DEQ, and DWF have jointly advised that the following precautions be taken when eating fish taken from Toledo Bend Reservoir:

- **Women of childbearing age and children less than seven years of age SHOULD NOT CONSUME BOWFIN and should consume no more than ONE MEAL PER MONTH of**

largemouth bass or freshwater drum combined from this advisory area (a meal is considered to be half a pound of fish for adults and children).

- **Other adults and children seven years of age and older should consume no more than TWO MEALS PER MONTH of bowfin and no more than FOUR MEALS PER MONTH of largemouth bass or freshwater drum combined from this advisory area (a meal is considered to be half a pound of fish for adults and children).**

Bayou Bartholomew in Morehouse Parish



Bayou Bartholomew - the red area shows the extent of this advisory area relative to fish consumption

This current advisory supersedes a previous advisory issued for this water body by the state on January 21, 1999. This advisory area includes Bayou Bartholomew from the Louisiana/Arkansas state line to its confluence with the Ouachita River.

Sampling in this advisory area indicated that largemouth bass, buffalo, catfish, crappie (sac-a-lait), freshwater drum (gaspergou), and bowfin (choupique, grinnel) contained sufficiently high levels of mercury to warrant an advisory. DHH, DEQ, and DWF have jointly advised that the following precautions be taken when eating fish taken from Bayou Bartholomew:

- **Women of childbearing age and children less than seven years of age SHOULD NOT CONSUME BOWFIN and should consume no more than ONE MEAL PER MONTH of all other species combined from this advisory area (a meal is considered to be half a pound of fish for adults and children).**

- **Other adults and children seven years of age and older SHOULD NOT CONSUME BOWFIN and should consume no more than FOUR MEALS PER MONTH of all other**

species combined from this advisory area (a meal is considered to be half a pound of fish for adults and children).

Gulf of Mexico
No Map Available

Some saltwater fish are subject to mercury advisories. The U.S. Food and Drug Administration (FDA) have issued a nation-wide advisory to pregnant women and women of childbearing age that can be viewed at the following web site: http://vm.cfsan.fda.gov/~dms/admehg.html.

The advisory provides the following suggestions:

> *"You can protect your unborn child by not eating these large fish (listed below) that can contain high levels of methylmercury:*
>
> *Shark Swordfish King mackerel Tilefish*
>
> *While it is true that the primary danger from methylmercury in fish is to the developing nervous system of the unborn child, it is prudent for nursing mothers and young children not to eat these fish as well."*

The FDA advisory is broad due in part to the fact that most saltwater fish eaten by the nation's public are caught commercially and bought in stores where the person eating the fish does not know how big the fish was. This advisory as developed in Louisiana considers that small King Mackerel may contain low enough levels to allow some consumption. DHH, DEQ and DWF have jointly advised that the following precautions be taken when eating King Mackerel:

- **ADVICE FOR ALL INDIVIDUALS: DO NOT CONSUME KING MACKEREL over 39 inches in total length.**
- **Women of childbearing age and children less than seven years of age should consume no more than ONE MEAL PER MONTH of King Mackerel under 39 inches in total length (a meal is considered to be half a pound of fish for adults and children).**
- **Other adults and children seven years of age and older should consume no more than FOUR MEALS PER MONTH of King Mackerel (a meal is considered to be half a pound of fish for adults and children).**

NEED MORE INFORMATION?

If you have questions about what you have read here, or need more information on mercury in the environment, the following contact information may prove useful:

Louisiana Department of Environmental Quality
Surveillance Division……..225-219-3640
www.deq.state.la.us

Louisiana Department of Health and Hospitals
Office of Public Health……1-888-293-7020
www.dhh.state.la.us

Louisiana Department of Wildlife and Fisheries
Inland Fisheries Division…….…… 225-765-2330
www.wlf.state.la.us

REFERENCES

Agency for Toxic Substances and Disease Registry, Chemical Fact Sheet
www.atsdr.cdc.gov/tfacts.nEED more information

Binational Toxics Strategy. (1999) Background Information on Mercury Sources and Regulations, 1999 Update.

Douglas, Neil H. Freshwater Fishes of Louisiana. Claitor's Publishing Division, Baton Rouge, LA. 1974.

Environmental Protection Agency. (1997) *Mercury Report To Congress* EPA 452/R-97-0003.

Foulke, J.E. 1994. Mercury in fish: cause for concern? FDA Consumer, September 1994. U.S. Food and Drug Administration. Article obtained through Internet.

Klaassen, Curtis D. Casaret & Doull's Toxicology: The Basic Science of Poisons-Fifth Edition. The McGraw-Hill Companies, Inc., 1996.

Louisiana Department of Environmental Quality. (2000) *2000 Annual Mercury Report*.

Schroeder, William and Munthe, John. (1998) Atmospheric Mercury-An Overview. *Atmospheric Environment* 32(5): 809-822.